KONICA 7050

MODEL

SERVICE MANUAL

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safety and important warning items

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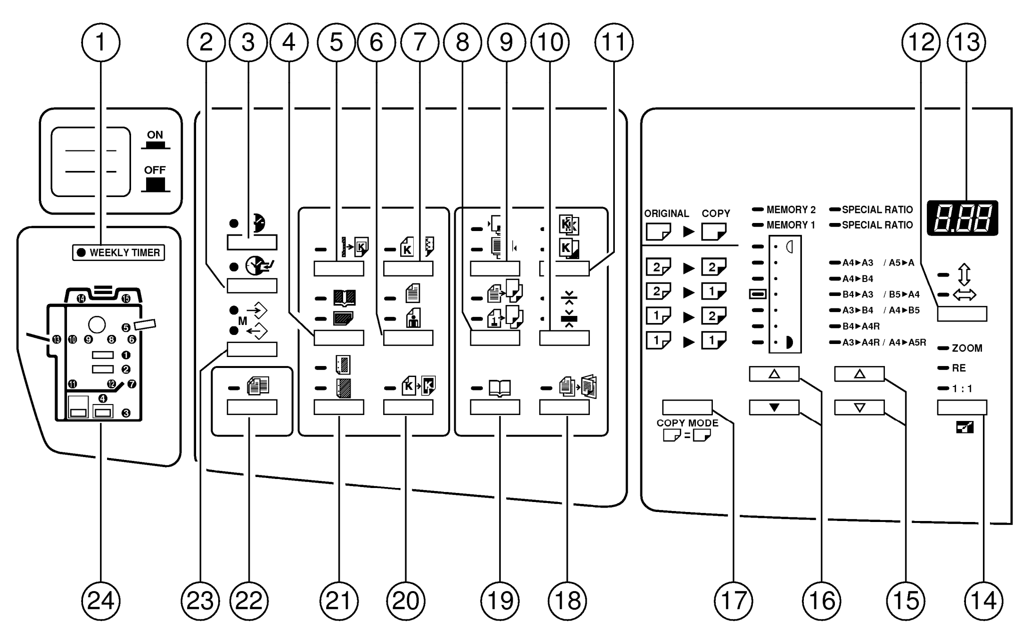
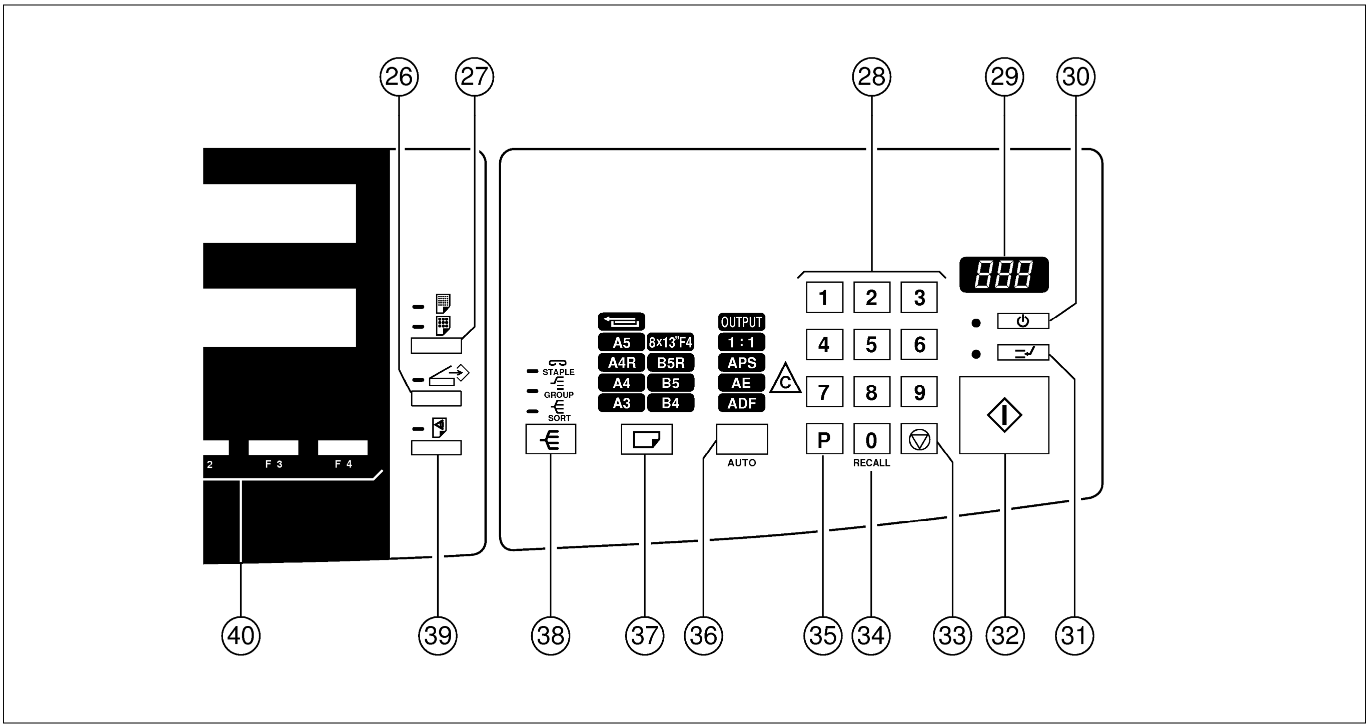
OPERATION PANEL



No.	Name	Function
①	Weekly timer display	Weekly timer control is displayed. (Indication with lighting)
②	Timer release button	A weekly timer setting mode is released.
③	Timer setting button	A weekly timer control mode is started.
④	Fold erasure.frame erasure button	To select a frame erasure mode, a fold erasure mode or a frame erasure/fold erasure mode.
⑤	Non-image area erasure button	Outside of an original is erased.
⑥	Character/photograph button.	To select a character mode, a photograph mode or a character/photograph mode.
⑦	Repeat button	A designated image area is printed repeatedly on a single copy paper.
⑧	Image insertion/chapter classify button	To select an image insertion mode or a chapter sectioning mode.
⑨	Inter-sheet button	To select inter-sheet 1 - 4 modes.
⑩	Thin paper/thick paper button	To select a thin paper copy mode or a thick paper copy mode.
⑪	OHP interleave button	To select an OHP interleave(copy/blank paper) mode.
⑫	Independent magnification button	To establish longitudinal and widthwise magnifications independently.
⑬	Magnification display	To indicate the selected magnification with figures. (Indication with lighting)
⑭	Magnification button	To select an auto mode, a zoom mode or a fixed mode all in a magnification mode.
⑮	Size reduction/enlargement button	To change a copy magnification.
⑯	Copy density button	To change copy density.
⑰	Copy mode button	To select a two-sided (one-sided) original/duplex (one-sided) copy mode
⑱	2-in-1/4-in-1 button	To select a 2-in-1 mode or a 4-in-1 mode by combining with a copy mode button.
⑲	Book copy button	To select a book copy mode.
⑳	Black and white reversal button	A white area and a black area both in an effective area are reversed.



No.	Name	Function
㉑	Reduction shift/shift button	To select a reduction shift mode or a shift mode.
㉒	Mixed originals button	To select a mixed mode for originals in the same series.
㉓	Job memory button	To select a writing mode or a reading mode for copy patterns.
㉔	Paper jam display	Locations of paper jam are indicated with figures.
㉕	Message display	Procedures for operation and the conditions of a machine are indicated with alphabet.
㉖	Platen memory button	A platen memory copy mode is selected.
㉗	Image reading button	To select a normal mode, a fine mode or a super-fine mode for image reading.
㉘	Copy quantity setting button	A copy quantity is set.
㉙	Copy quantity display	To indicate the selected copy quantity and copy count in copying.
㉚	Pre-heating button	To set to a pre-heating mode.
㉛	Interruption button	To select an interruption mode.
㉜	Copy button	To start copying.
㉝	Stop/clear button	To discontinue copying and cancel copy quantity set.
㉞	Recall button	To confirm the set copy quantity in the course of copying.
㉟	P button	To read various settings and counts.
㊱	Auto button	To select finisher, 1:1, APS, AE or ADF mode.
㊲	Paper size button	To select paper trays. (paper sizes)
㊳	Output button	To select a stapling mode, a grouping mode or a sorting mode.
㊴	Proof copy button	To select a proof copy mode.
㊵	Menu selecting button	Confirmation and selection are made on a menu screen.

COPY OPERATION

## [1] 2-in-1/4-in1

Plural originals are copied on a single copy paper. originals are copied in the order of reading originals for a [2-in-1 mode], and originals are copied in the order to a weekly-magazine binding for a [4-in-1 mode].

1. Conditions for use

a. Originals in A4 and B5 sizes only are acceptable
b. A3, B4, A4R and B5R are necessary for copy paper in accordance with originals.
c. By-pass feed paper does not work.
d. Only reduction shift function and single step function can be combined with 2-in-1 function.
e. A stapling mode can not be selected.

2. Method of setting

(1) Set an original on an ADF.
(2) Press a 2-in-1/4-in-1 button.
(3) Press a copy mode button to select a copy mode.
- Selection of one-sided original/one-sided copy and two-sided original/one-sided copy mode makes a 2-in-1 mode. (Two originals are printed on the one copy paper.)

Face side	1	2	3	4	• •	11	12

- Selection of one-sided original/duplex copy and two-sided original/duplex copy mode makes a 4-in-1 mode. (Four originals are printed on the double sided copy to one copy paper.)

Face side	12	1	10	3	8	5
Reverse side	2	11	4	9	6	7

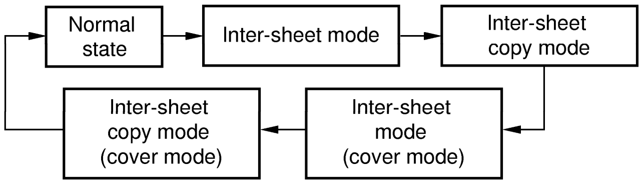
(4) If necessary for booklet form, select reduction shift function.

[2] Inter-sheet Mode

This mode is used to insert blank sheets of colored paper, for example, at arbitrary positions among the copies, or to copy arbitrary originals on colored paper, for example.

1. Selection of a inter-sheet mode

Each time the inter-sheet button is pressed, a mode is changed.


Normal state
Inter-sheet mode
Inter-sheet copy mode
Inter-sheet mode (cover mode)
Inter-sheet copy mode (cover mode)

2. Conditions of use

a. A machine is required to be with FS-102.

3. Inter-sheet mode

A paper with a different type can be inserted between ordinary copy papers without being copied.

a. Method of setting

(1) Ordinary copy paper is set on any one of trays 2, 3 and 4, copy paper to be inserted is set on tray 1, and an original is set on an ADF.
(2) Press the inter-sheet button to select an inter-sheet mode.
(3) Input the smaller number of original among others where a different type paper is to be inserted, using a copy quantity setting button.

Original number	1	2	3	• • •	50
Place for insertion	↑	↑	↑		↑
Set sheet number	1	2	3		50

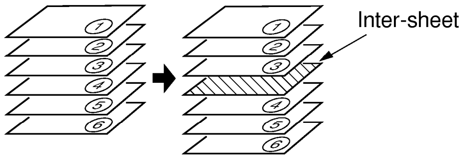
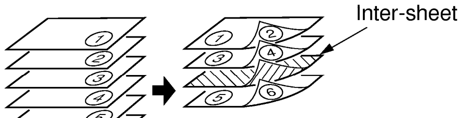
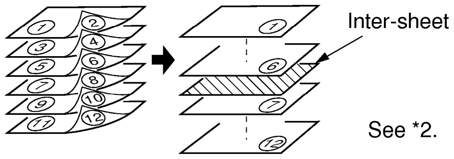
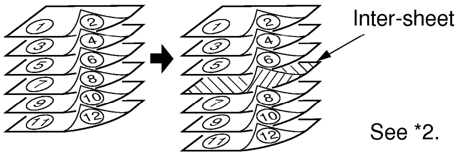
- Maximum number of locations for setting: 7 locations
- Maximum number of set sheets: 50 sheets
- For the one-sided original/duplex copy mode, only designation of even number pages is effective.

(4) Press the set/F1 button after inputting one set sheet number. When inputting plural set sheet numbers, repeat from (3).
(5) After inputting all set sheet numbers, press the set/F1 button further for completion of setting.
- When a stop/clear button is pressed, setting is canceled.

(6) Use a copy button for printing.

b. Examples of using inter-sheet mode

Example) Setting number: To set to 3
Original numbers 1 2 3 4 5 6
Insertion position ↑
Set sheet number 3

	Copy result
One-sided ↓ one-sided	
One-sided ↓ two-sided	 See *1.
Two-sided ↓ one-sided	 See *2.
Two-sided ↓ two-sided	 See *2.

*1: Since it is not possible to insert between face 3 and face 4, 1 is added to the set number and an inter-sheet is inserted after the 4th original.

*2: In the inter-sheet mode, the original number corresponds to the number of originals. When the set number is set to 3, an inter is inserted before the 4th original.

4. Inter-sheet copy mode

Between ordinary copy papers, a different type paper (color paper for sectioning chapters) is inserted after being copied.

a. Method of setting

(1) Ordinary copy paper is set on any one of trays 2, 3 and 4, copy paper to be inserted is set on tray 1, and an original is set on an ADF.

(2) Press the inter-sheet button to select an inter-sheet mode.

(3) Input the number of an original to be copied on a different type paper with a copy quantity setting button.

Original number	1	2	3	•••	50
Set sheet number	1	2	3		50

- Maximum number of locations for setting: 7 locations
- Maximum number of set sheets: 50 sheets
- For the one-sided original/duplex copy mode, only designation of even number pages is effective.

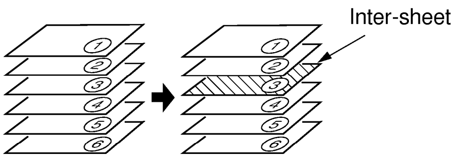
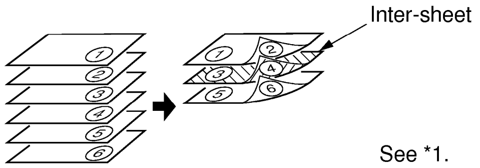
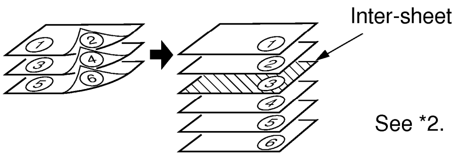
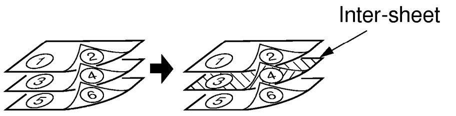
(4) Press the set/F1 button after inputting one set sheet number. When inputting plural set sheet numbers, repeat from (3).

(5) After inputting all set sheet numbers, press the set/F1 button further for completion of setting.
- When a stop/clear button is pressed, setting is canceled.

(6) Use a copy button for printing.

b. Examples of using inter-sheet mode

Example) Setting number: To set to 3
Original numbers 1 2 3 4 5 6
Set sheet number 3

	Copy result
One-sided ↓ one-sided	
One-sided ↓ two-sided	 See *1.
Two-sided ↓ one-sided	 See *2.
Two-sided ↓ two-sided	 See *2.

*1: Face 4 is copied on the reverse side of an inter-sheet.
*2: In the inter-sheet mode, face 3 is copied on the inter-sheet because the set sheet number corresponds to the number of original faces.

5. Inter-sheet mode (cover mode)

Different type papers (thick papers) fed through by-pass feed are ejected without being copied to be positioned before the lead paper for ordinary copying (to be a front cover) and after the last paper (to be a back cover).

⚠ **Note:** Paper size of selected tray and that of by-pass feed must be coincident.

a. Method of setting

(1) Set an original on the ADF. Feed the front cover and the back cover through by-pass feed.
(2) Press the inter-sheet button to select an inter-sheet mode (a cover mode).
(3) Use a copy button for printing.

6. Inter-sheet copy mode (cover mode)

Different type papers (thick papers) fed through by-pass feed are ejected after being copied to be positioned before the lead paper for ordinary copying (to be a front cover) and after the last paper (to be a back cover).

⚠ **Note:** Paper size of selected tray and that of by-pass feed must be coincident.

a. Method of setting

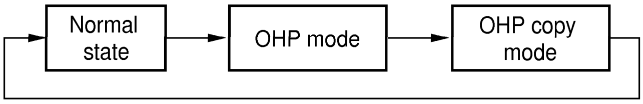
(1) Set an original on the ADF. Feed the front cover and the back cover through by-pass feed.
(2) Press the inter-sheet button to select an inter-sheet copy mode (a cover mode).
(3) Use a copy button for printing.

[3] OHP Interleave Mode

When copying on an OHP film, white paper (OHP mode) or copy paper for the same original (OHP copy mode) is ejected as a lining paper.

1. Selection of OHP interleave mode

Each time the OHP interleave button is pressed, a mode is changed.



2. Conditions of use

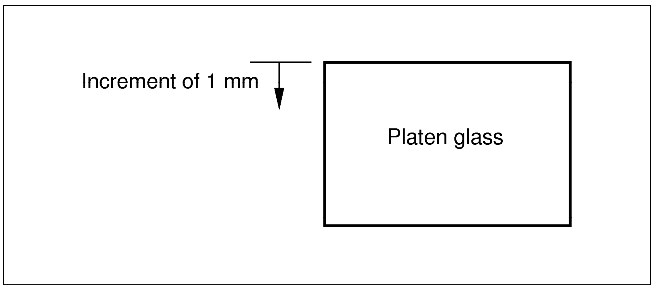
a. An OHP film is inserted in a tray for by-pass feed.
b. A copy mode is limited only to those of one-sided original/one-sided copy and two-sided original/one-sided copy.
c. An output button is not accepted.
d. A cassette other than a tray for by-pass feed can be designated for interleave, and its size is required to be the same as the OHP film.

[4] Repeat Function

Only a designated area is printed on a single copy paper repeatedly. (only in the primary scanning direction)

1. How to operate

(1) Press the repeat button.
(2) Set the original to be copied repeatedly so that the original is aligned with the trailing edge (rear side on the left) of the A3 scale plate.
(3) Set the image area to be copied with an increment of 1 mm using the copy quantity setting button. (0 - 150)
(4) When a set/F1 button is pressed, the image area is decided.
(5) Use a copy button to print on a single copy paper repeatedly.



[5] Proof Copy

When printing plural sets, conduct output for printing for only one set first, then stop printing temporarily, change a mode, and then conduct printing for the remaining sets.

1. Conditions of use

a. Combination with a density monitor function is impossible.
b. Under the interruption mode, the proof copy is not accepted.
c. The proof copy can not be selected under the group mode.
d. The proof copy can not be selected under the platen copy.

2. How to operate

(1) Set the original on the ADF.
(2) Select the function.
(3) Press the proof copy button.
(4) Press the copy button to start printing. (When the other function is selected, start printing with the How to operate in that selected function.)
(5) Stop printing temporarily after completion for one set.
(6) Select the change to other function.
(7) Press the copy button further for printing for the remaining sets.

3. Change after temporary stop

While printing is stopped temporarily, the following mode or function can be changed.

a. Output mode (provided that a group mode is not accepted)
b. Copy quantity (number of sets)
c. Thick paper/thin paper

[6] Book Memory Function

In a platen mode, originals are scanned one by one, and images thus stored in ERDH are printed on a nonstop basis. In a platen mode, it is possible to perform an operation identical to outputting in an ADF mode.

1. Conditions of use

a. Platen mode

b. Combinations with the following buttons are impossible.
- Book copy button
- Inter-sheet button
- OHP interleave button
- Job memory button
- Mixed original button

c. AMS is impossible.

2. How to operate

(1) Press the platen memory button.
(2) Set an original in a platen mode.
(3) Press the set/F1 button to read an original in a memory.
(4) Repeat the aforementioned items (2) and (3) for all originals.
(5) After reading all originals, press the set/F1 button to confirm.
(6) Use a copy button for printing.

[7] Image insertion Function

Establishment of sheet numbers makes it possible to insert an image read with platen in any place in images taken in with ADF original.

1. Conditions of use

a. Maximum number of locations for setting: 7 locations
b. Maximum number of set sheets: 50 sheets
c. In an APS mode, only a size of the first original in ADF originals is detected.
d. An input of the same number is possible. An original with the following same number is inserted right after the inserted original with the preceding same number.

2. How to operate

(1) Use a image insertion/chapter sectioning button to establish a image insertion mode.
(2) Input the image data to be read in a platen mode (insertion original) as a number of the original to be inserted, using a copy quantity setting button. (For example, when inserting after the second one, input 2.)

Original number $\boxed{1}\ \boxed{2}\ \boxed{3}\ \cdots\ \boxed{50}$

Place for insertion ↑
Sheet number to be set 2

(3) Confirm by the use of the set/F1 button.
- It is possible to cancel the numerical value inputted with a stop/clear button.

(4) Repeat the aforementioned items (2) and (3) when setting the number of the other original to be inserted.
(5) After completion of inputting, press the set/F1 button again for the completion of setting.
(6) When the set/F1 button is pressed after an original is set on an ADF, an ADF original is read.
(7) After reading from an ADF is completed, when an original to be inserted is set on a platen and the set/F1 button is pressed, the original to be inserted is read.
(8) When making other original for insertion to be read, repeat the item (7).
(9) Use a copy button for printing.

[8] Chapter Control Function

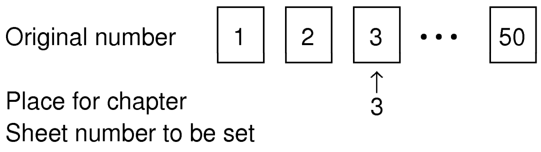
Be sure to make the forefront of each chapter to be the face side of a page. In setting the original sheet number of the forefront of each chapter in a one-sided original/duplex copy mode, when that sheet falls on the back side of a page, it is necessary that the back page is ejected without being copied and the following face side page is copied.

1. Conditions of use

a. Maximum number of locations for setting: 7 locations
b. Maximum number of set sheets: 50 sheets
c. An ERDH mode is selected automatically. Under the condition that the ERDH mode can not be selected, the chapter control function can not be selected.
d. In a super fine mode, the chapter control function is canceled automatically.
e. A copy mode is possible only for a one-sided original/duplex copy mode.

2. How to operate

(1) Use a image insertion/chapter sectioning button to establish a chapter sectioning mode.
(2) Input the number of an original sheet representing the forefront of a chapter, using a copy quantity setting button.



(3) Confirm by the use of the set/F1 button.
  • It is possible to cancel the numerical value inputted with a stop/clear button.
(4) When setting the number of an original sheet representing the forefront of another chapter, repeat the aforementioned items (2) and (3)..
(5) After completion of inputting, press the set/F1 button again for the completion of setting.
(6) Set an original on an ADF.
(7) Use a copy button for printing.

[9] Non-image Area Erase Function

This is a function on the assumption of book copy, and it detects an original through pre-scanning and thereby erases an original margin automatically, when copying in the state of opened ADF.

1. Conditions of use
   a. An ADF is opened.

2. How to operate
   (1) Open the ADF.
   (2) Press the non-image area erasure button.
   (3) Set an original on a platen.
   (4) Use a copy button for printing.

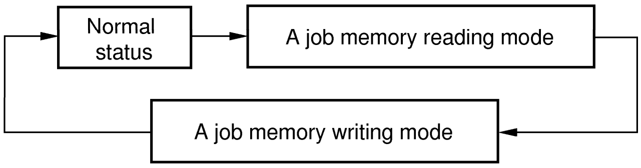
3. Others
   When an ADF is closed, images on an entire page of the original are outputted. (An area exceeding the original size can also be used for copying, when necessary.)

[10] Reading/Writing Mode (Job Memory)

Write a copy pattern set together with a writer number and read the copy pattern registered by means of the writer number when necessary.

1. Selection of a reading/writing mode

Every time a job memory button is pressed, a mode is changed.



a. In a reading mode, a reading LED is flickered.
b. In writing mode (the job memory writer mode), a writing LED is flickered.

2. Writing method

(1) Display a copy pattern written on the job memory on a display panel.
(2) Press the job memory button and select the writing mode (the job memory writer mode).
(3) Input the writer number by means of the copy quantity setting button (0 to 9).
(4) After writing is completed, the writing LED is lit.

3. Reading method

(1) Press the job memory button, and select the reading mode.
(2) Input the register number already registered by means of the copy quantity setting button (0 to 9).
(3) The copy pattern read is displayed on the display panel.
(4) Press the P button, and finalize.
(5) After reading is completed, the reading LED is flickered.

[11] Black-and-White Reversal Mode

Reverse a white portion and black portion in a valid region.

1. Selecting a black-and-white reversal copy button.

(1) Press a black-and-white reversal button.
(2) A black-and-white reversal LED is lit.

[12] Book Copy Mode

It copies an original image (1 page) for 2 pages in terms of one side or copies on the face side and the rear side of a copy paper.

1. Use condition

a. Original size: A3/B4.
b. Copy paper size: A4/B5
c. Only a one side original/one side copy mode and a one side original/two sided copy mode is allowed.
d. It is impossible to change the order of pages.
e. It is impossible to provide a white paper.
f. When 2 in 1/4 in 1 button is pressed in selecting a book copy mode, papers can be changed to the order of copying in the same order of the 2 in 1 mode.

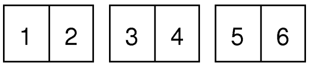
Note: For the machines equipped with controller ROM C1/C2 of Ver.15 or older, or image process ROM of Ver 14 or older; When the book copy mode and a function of erasing outside original are selected concurrently, the range of erasing outside the original is not guaranteed for non-regular size documents.

2. Setting method

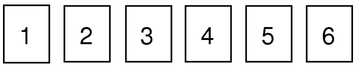
(1) Press the book copy button.
(2) Set an original (1 page) covering 2 pages of a one side in a platen mode.
(3) Press a set/F1 button, and read the original on the memory.
(4) Repeat (2) and (3) above for the entire original.
(5) After reading the entire original, press the set/F1 button for finalizing.
(6) Print it by means of the copy button.

3. Outputting order

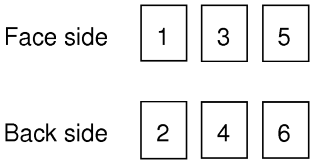
- Original for 2 pages of one side original.



a. Outputting in the one side original/one side copy mode.



b. Outputting in the one side original/two sides copy mode



[13] Operation for Memory Overflow

1. Real time output mode

One copy for the scanned data is outputted, and the copy operation stops regardless of the selected copy quantity. The memory overflow message will appear alternatively.

When you continue copying:

(1) Press the copy button to copy the rest of the selected number of the scanned data.
  - The staple is canceled if it is selected, and the copy operation is executed in the sorting mode.
  - If the second and later copy is operated, the page that was during process when the memory overflow has occurred, is not copied. Therefore, note that one or two pages may be skipped.

(2) When the selected number of copies are completed, the copy operation stops and all memory will be cleared.

CHECK/RELOAD
ORIGINAL

COPY KEY :
CLR/AUTO KEY : CANCEL

(3) Check the number of originals then press the copy button to copy the rest.

When you stop copying:

(1) Press either stop/clear or auto button.

SET FEWER ORIGINALS
AND REPROGRAM JOB

(2) All memory will be cleared.
  - Press the stop/clear button to maintain the settings and the auto button to return to the automatic state.

2. Memory output mode

The scanned data is maintained. After the machine stops running, the memory overflow message will appear alternatively.

In this case, no copy paper exit will be executed.

When you continue copying:

(1) Press the copy button to copy the selected number of the scanned data.

(2) When the selected number of copies are completed, the copy operation stops and all memory will be cleared.

CHECK/RELOAD
ORIGINAL

COPY KEY :
CLR/AUTO KEY : CANCEL

(3) Check the number of originals then press the copy button to copy the rest.

When you stop copying:

(1) Press either stop/clear or auto button.

SET FEWER ORIGINALS
AND REPROGRAM JOB

(2) All memory will be cleared.
  - Press the stop/clear button to maintain the settings and the auto button to return to the automatic state.

VARIOUS SETTINGS

[1] Independent Magnification Change Function

Each of lengthwise magnification and widthwise magnification is changed independently for copying.

1. Conditions of use

a. Combination with book copy, shift or reduction shift does not work.
b. An APS function is released.
c. Established lengthwise magnification and widthwise magnification continue to be stored, except the following.items.
  - Power OFF
  - Auto shut off
  - Pre-heating mode
  - Job memory reading

2. How to select

(1) Press an independent magnification change button to select lengthwise magnification or widthwise magnification.
(2) Use an enlargement (△) button or a reduction (▽) button to select the magnification.
  - Lengthwise magnification or widthwise magnification is displayed on a message indicator.

[2] Arbitrary Magnification Setting

In addition to fixed magnifications, arbitrary magnifications can also be set and stored. The arbitrary magnification can be set within a range of 0.50 - 4.00. Both arbitrary magnification 1 and arbitrary magnification 2 can be set.

1. Setting arbitrary magnification 1

(1) Press the magnification button while pressing a P button under the condition that “arbitrary magnification 2” is not set.
(2) Set the magnification with a copy quantity setting button. (50 - 400%)
  - 50% inputs “050” and 400% inputs “400”.
(3) Press the P button for completion of setting.
  - At this moment, when a stop/clear button is pressed, it is possible to get out of a setting mode without storing the set data.

2. Setting arbitrary magnification 2

(1) Select the fixed magnification mode with a magnification button, and select the arbitrary magnification 2 with an enlargement (△) button.
(2) Press the magnification button while pressing a P button under the condition that “arbitrary magnification 1” is set.
(3) Set the magnification with a copy quantity setting button. (50 - 400%)
(4) Press the P button for completion of setting.

3. How to select

Arbitrary magnification 1 and arbitrary magnification 2 both set can be selected by pressing the enlargement button (△).

[3] Maximum Magnification/Minimum Magnification Jump Function

1. How to select

a. For selecting the maximum magnification (4.00), press an enlargement button (△) while pressing a P button.
b. For selecting the minimum magnification (0.50), press a reduction button (▽) while pressing a P button.

2. Conditions of use

a. Execution of this function establishes a zoom magnification mode.

[4] Arbitrary Density Setting

Arbitrary density is set and stored. A sheet of an original is divided into four, and prints each being different in terms of density are made. Arbitrary density 1 and arbitrary density 2 can be set.

1. Setting arbitrary density 1 (For light original)

(1) Set an original in a platen mode.
(2) Press the darker button (▼) in copy density button while pressing a P button.
(3) Press a copy button. Then, 4-divided sample images (1 - 4) each being different in terms of density are printed.
(4) After that, each time the copy button is pressed, sample images (5 - 8), (9 - 12) and (13 - 16) are printed.
(5) Input the number of the desired density with a copy quantity setting button.
(6) Use a set/F1 button for decision.

2. Setting arbitrary density 2 (For dark original)

Conduct the same operations as in the aforementioned “Setting arbitrary density 1” except the item (2).

(1) Press the lighter button (△) in copy density button while pressing a P button.

3. How to select

a. When keep pressing the lighter button (△) in copy density button shifting from arbitrary density 1 to arbitrary density 2 is carried out.

b. Press the lighter button (△) in copy density button while pressing a P button to select the arbitrary density 2.

c. Press the darker button (▼) in copy density button while pressing a P button to select the arbitrary density 1.

[5] Density Shift Setting

Ordinary density for each of characters, photographs and character/photograph modes can be set. Density in 5 steps from dark to light can be set. When characters, photographs and character/photograph modes are selected, this ordinary density is selected automatically.

1. Conditions of use

a. Under the state of idling or a copy mode

b. Not possible in 35 and 36 modes

2. How to set

(1) Select “character”, “photograph” or “character/photograph” mode with a character/photograph button.

(2) Press a copy quantity setting 3 button while pressing a P button.

(3) Set the ordinary density corresponding to the mode selected in the aforementioned item (1), using copy quantity setting buttons 1 - 5. (1: darker 5: lighter)

(4) Press a set/F1 button for decision.

(5) Set the ordinary density for another mode by repeating the aforementioned items (1) - (4).

[6] Selecting an Image Reading Mode

An image reading mode for an image under electronic RDH is selected.

1. Selection of an image reading mode

“Normal”, “Fine” and “Super fine” are switched by pressing an image reading button.

	Fine LED	Super fine LED
Normal	Lights-out	Lights-out
Fine	Lighting	Lights-out
Super fine	Lights-out	Lighting

a. Normal mode: To be selected when the number of originals is large.

b. Fine mode: To be selected when the number of originals is small and image quality is important.

c. Super fine mode: To be selected for a delicate original such as a photographic original.

Note: When memory overflow occurs in a fine mode, change the fine mode to a normal mode.

2. Conditions of use

a. Super fine mode is allowed only when electronic RDH is not used. Therefore, an ADU mode and special functions can not be used.

[7] Character/Photograph Mode

Output for “photograph” use, “character” use or “character/photograph” use is selected depending on the type of an original image so as to select the function for reproducing an original on a high fidelity basis.

1. Selection of character/photograph

“Photograph”, “character” and “character/photograph” modes are switched when a character/photograph button is pressed.

	Character LED	Photograph LED
Character mode	Lighting	Lights-out
Photograph mode	Lights-out	Lighting
Character/photograph mode	Lights-out	Lights-out

[8] Mixed Originals Copy

Mixture of the same series originals is made possible under the use of an ADF. When an APS or an AMS is selected, paper size is detected for each original for selection of paper size or selection of magnification.

1. How to select

Set the mixture of the same series originals on the ADF and press the mixed original button.

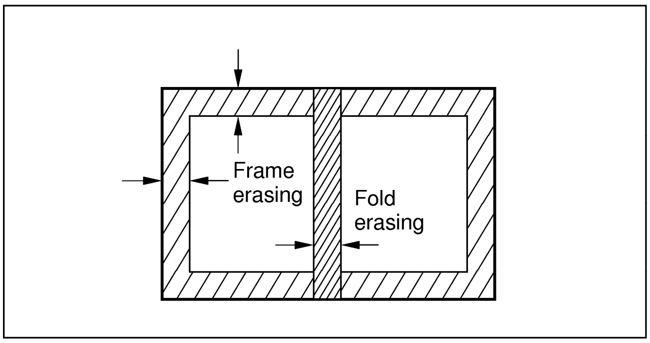
2. Conditions of use

a. Number of original faces: up to 100 faces
b. Original size: A3/A4, B4/B5
c. By-pass feed paper supply is excluded.
d. A size falls on one on the reverse side for one-sided original/duplex copy.

[9] Frame Erasing/Fold Erasing Mode

To select frame erasing and fold erasing and to set an amount of erasing when copying.

1. Amount of frame erasing and fold erasing



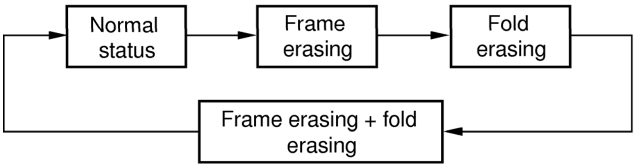
An amount of erasing capable of being set is shown in the following table.

(Unit: mm)

Fold erasing	10	20	30
Frame erasing	5	10	15

2. Setting method

(1) Press a folding erasing/frame erasing button for selecting a mode. An LED selected is lit.



(2) Press a P button.
(3) Input an amount of frame erasing (5, 10, 15) and an amount of folding erasing (10, 20, 30) by means of the copy quantity setting button.
(4) Press the P button.

Note: After inputting data by means of the copy quantity setting button, when the P button is not pressed for 10 seconds, the data during inputting is canceled.

3. Paper size capable of conducting fold erasing and frame erasing.

The following table shows paper sizes capable of being used.

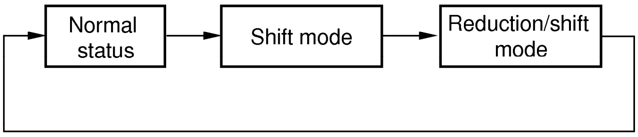
Fold erasing/ Frame erasing + fold erasing	A3, B4, A4R, B5R
Frame erasing	A3, B4, A4R, B5R, A4, B5, A5

[10] Shift/Reduction Shift Mode

It forms image shift on a copy paper.

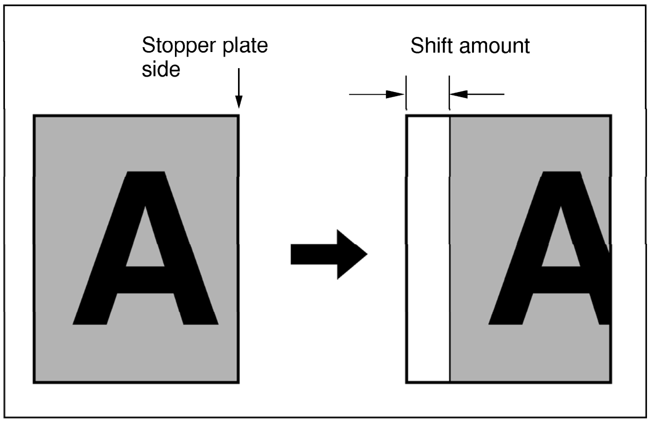
1. Selecting a shift/reduction shift mode

Every time the reduction shift/shift button is pressed, a mode is changed.



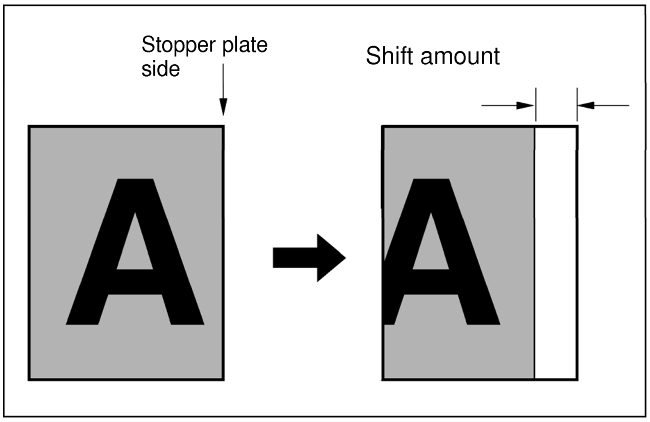
2. Shift mode

In case of front side, the image is shifted towards the sub-scanning direction according to the selected shift amount. The trail edge of image will be deleted by the shifted distance.

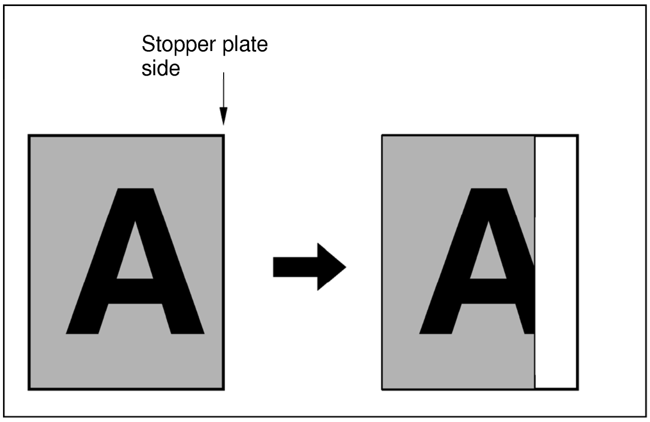


In case of rear side, select either of the followings in the 25 mode.

- Image is shifted towards the sub-scanning direction according to the selected shift amount.



- The trail edge is deleted by the shifted distance.



a. Use condition

(1) It is possible to be used only in an equivalent magnification setting.
(2) It is impossible to output on a real time basis.
(3) It is impossible to use an super fine mode.
(4) It is invalid to set an shift amount of the front surface and the rear surface independently in a one side original/both sides copy mode.
(5) In a platen mode, an original stopper plate side is shifted.

b. Behavior corresponding to each copy mode

Behavior of the shift function changes depending upon whether or not there is a copy mode and an original image shift. For an original not having the image shift, prepare the image shift. For an original having the image shift, align the image shift on the front surface and on the rear surface.

- A one side original/one side copy mode (there is no image shift.)

An odd number surface	The rear edge (Inputting a front data.)
An even number surface	The rear edge (Inputting a front data.)

- A one side original/two sides copy mode (there is an image shift.: see “Adjustment ‘Mode 25’”)

An odd number surface	Not shifted
An even number surface	Front edge (Inputting a rear data.)

- A one side original/two sides copy mode (there is no image shift.: see “Adjustment ‘Mode 25’”)

An odd number surface	Rear edge (Inputting a front data.)
An even number surface	Front edge (Inputting a rear data.)

- Two sides original/one side copy mode (there is an image shift.: see “Adjustment ‘Mode 25’”)

An odd number surface	Not shifted
An even number surface	Rear edge (Inputting a rear data.)

- Two sides original/one side copy mode (there is no image shift.: see “Adjustment ‘Mode 25’”)

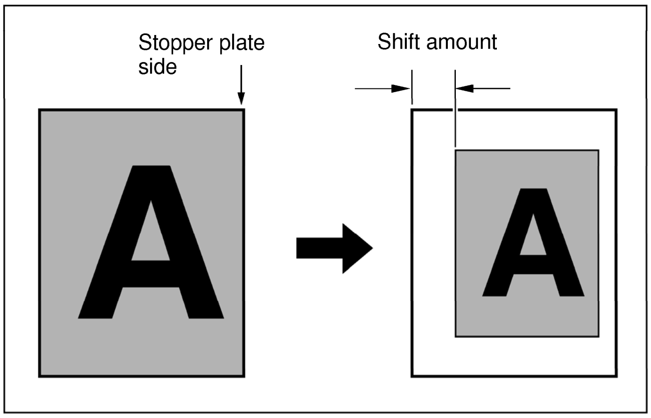
An odd number surface	Rear edge (Inputting a front data.)
An even number surface	Rear edge (Inputting a rear data.)

- Two sides original/two sides copy mode (there is no image shift.)

An odd number surface	Rear edge (Inputting a front data.)
An even number surface	Front edge (Inputting a rear data.)

3. Reduction shift mode

Reduce an image in a manner that there is no image erasing according to a shift amount, and then, shift in a sub-scanning direction.



a. Use condition

(1) It is possible to be used only in an equivalent magnification setting.
(2) It is impossible to output on a real time basis.
(3) It is impossible to use an super fine mode.
(4) An object is an original not having an image shift.
(5) In a platen mode, an original stopper plate side is shifted.

b. Behavior corresponding to each copy mode

Behavior of the shift function changes depending upon a copy mode. For an original not having an image shift, the image shift is prepared. The reduction shift mode is not used for an original having the image shift.

- A one side original/one side copy mode

An odd number surface	Rear edge (Inputting a front data.)
An even number surface	Rear edge (Inputting a rear data.)

- A one side original/two sides copy mode

An odd number surface	Rear edge (Inputting a front data.)
An even number surface	Front edge (Inputting a rear data.)

- A two sides original/one side copy mode

An odd number surface	Rear edge (Inputting a front data.)
An even number surface	Rear edge (Inputting a rear data.)

- A two sides original/two sides copy mode

An odd number surface	Rear edge (Inputting a front data.)
An even number surface	Rear edge (Inputting a rear data.)

c. Magnification

Magnification is automatically determined due to a shift amount and the size of copy paper.

Magnification = {1-(shift amount/width of sub-scanning)} x 100

Example) When a shift amount is 20 mm and a copy paper is A4,
Magnification = {1-(20/210)} x 100   90%

4. Setting of shift amount

The shift amount is set by inputting data on the front surface only or by inputting data on the front surface and the rear surface.

(1) Press the reduction shift/shift mode button, and select a reduction shift mode or a shift mode.
(2) Press a P button.
(3) Input the width of an image shift on a front surface by means of the copy quantity setting button (1 to 50 mm).
(4) Press a set/F1 button, and finalize.
(5) Input the width of an image shift on a rear surface by means of the copy quantity setting button (1 to 50 mm).
(6) Press a set/F1 button, and finalize.

[11] Weekly Timer (Option)

Power for the main body is turned ON or OFF automatically at the time set in advance.

1. Working function

a. ON time monitoring mode
Power for the main body is turned ON at the ON time established in advance. (Main body is in the state of OFF.)

b. OFF time monitoring mode
Power for the main body is turned OFF at the OFF time established in advance. (Main body is in the state of ON.)

c. Forced starting mode
Under the ON time monitoring mode, that mode,is released by a timer releasing button and power for the main body is turned ON.

d. Forced OFF mode
Under the OFF time monitoring mode, that mode,is released by a timer releasing button and power for the main body is turned OFF.

2. Timer setting function

a. Setting the current time
The current time is first set in a form of Year/Month/Day/Hour/Minute. A day of the week is displayed automatically.

b. Time setting on a timer
For each day of the week, ON time and OFF time are set. Setting of the operation day of the week and setting of ON/OFF hours are conducted.

c. Lunch break OFF function
The lunch break OFF time is common to all days of the week, and only one lunch break OFF time can be set.

d. Setting operation-designated days
ON/OFF setting for the specific day different from the contents registered with setting of the time for a timer is conducted.

3. Conditions of use

a. Machine with a weekly timer

b. The main switch on the main body is in the state of ON.

c. Even when a power cord for the main body is not live, data can be stored.

d. The weekly timer is not allowed to be OFF under the following conditions.
- In the course of copying and for 5 minutes after an end
- For 5 minutes after operation on the operation panel
- Command for prohibition of OFF for main body CPU

4. Weekly timer setting mode

The weekly timer setting mode is established when a timer setting button is pressed.

Procedure	Operation
1	Press a timer setting button under a normal mode. When a password is not registered, advance to Item 3. (*1) <W. T. SETTING MODE> ENTER PASSWORD * * * *
2	Input the password with a copy quantity setting button, and press a set/F1 button. <W. T. SETTING MODE> ENTER PASSWORD 1 2 3 4
3	A menu screen 1 of the weekly timer setting mode appears. (*2) 1 : SETTING TIME 2 : SETTING W. T. ON / OFF 3 : EXIT

(*1) See page 1-20 for the method of registering a password.

(*2) When a copy quantity setting button 3 (end) is pressed on a menu screen, it is possible to get out of the weekly timer setting mode.

● Principle of operation buttons

- Copy quantity setting button
  Data are inputted.
- Set/F1 button
  Data are decided.
- Stop/clear button
  Goes back to a preceding message.
- Timer setting button
  This is used to enter into and to get out of the weekly timer setting mode.
- Auto button
  To get out of the weekly timer setting mode.

5. Setting the current time

This is to set the current time on a year/month/day/hour/minute basis. Dates from 94/01/01 (January 1, 1994) to 09/12/31 (December 31, 2009) can be set.

Procedure	Operation
1	Call a menu screen 1. 1 : SETTING TIME 2 : SETTING W. T. ON / OFF 3 : EXIT
2	Press a copy quantity setting button 1 (current time setting). INPUT DATE AND PRESS SET 14/07/95 14:30
3	Input with a copy quantity setting button in the order of year/month/day, and press a set/F1 button. INPUT TIME AND PRESS SET 14/07/95 (FRI) 14:30
4	Input with a copy quantity setting button in the order of hour (24 hours)/minute, and press a set/F1 button. <SETTING TIME MODE> SETTING COMPLETION
5	Display is for about 3 seconds, and goes back to the menu screen 1.

6. Weekly timer ON/OFF

A mode for setting ON/OFF of a weekly timer is established.

Procedure	Operation
1	Press a timer setting button to call a menu screen 1. 1 : SETTING TIME 2 : SETTING W. T. ON / OFF 3 : EXIT
2	Press a copy quantity setting button 2 (weekly timer ON/OFF). <W. T. FUNCTION> SELECT 1 OR 2 1 : USE 2 : NON–USE 1
3	Press a copy quantity setting button 1 (to use), and press a set/F1 button. (*1) Menu screen 2 of the weekly timer ON/OFF setting mode appears. (*2) 1 : TIMER SETTING 2 : LUNCH TIME OFF 3 : HOLIDAY SETTING 4 : EXIT

(*1) At this time, when a copy quantity setting button 2 (not to use) and a set/F1 button are pressed, weekly timer control function can be released.

(*2) When a copy quantity setting button 4 (end) is pressed on a menu screen 2, the menu screen 1 is resumed.

7. Timer time setting

How to set the time includes the following two methods.

- Collective setting
  Days from Monday through Friday are set collectively, and Saturday and Sunday are set separately. It is further possible to set each day of the week continuously.
- Setting by a day of the week
  Days from Monday through Sunday are set individually.

a. Collective setting

Procedure	Operation
1	Press a timer setting button to call a menu screen 1.
2	Press a copy quantity setting button 2 (weekly timer ON/OFF) to call a menu screen 2.
3	Press a copy quantity setting button 1 (to use) and a set/F1 button to call a menu screen 2. 1 : TIMER SETTING 2 : LUNCH TIME OFF 3 : HOLIDAY SETTING 4 : EXIT
4	Press a copy quantity setting button (timer time setting). <W. T. SETTING> SELECT 1 OR 2 1 : TIMER 2 : DAY OFF (MON) 1
5	To perform ON/OFF control on a Monday, press the “1” copy quantity setting button (use timer), then press the set/F1 button. To activate the day OFF setting, press the “2” copy quantity button (day OFF), then press the set/F1 button.
6	For Tuesday through Sunday, repeat Item 5. <TIMER SETTING> SELECT 1 OR 2 1 : WEEK SET 2 : DAY SET 1
7	Press a copy quantity setting button 1 (collective) and a set/F1 button to set Monday through Friday collectively. <ON / OFF SETTING> INPUT TIME (MON) 08:30 ON TIME – FRI) 18:00 OFFTIME
8	Input ON time for Monday through Friday with a copy quantity setting button in the order of hour (24 hours)/minute, and press a set/F1 button. Successively, input OFF time for Monday through Friday with a copy quantity setting button in the order of hour (24 hours)/minute, and press a set/F1 button. (*2) <ON / OFF SETTING> INPUT TIME (SAT) 08:30 ON TIME 18:00 OFFTIME
9	Repeat Item 8 to set ON/OFF time for Saturday and Sunday individually. DAYLY ADJUSTMENT ? 1 : YES 2 : NO
10	Press a copy quantity setting button 2 (No). (*3) <ON / OFF SETTING> SETTING COMPLETION
11	Display is for about 3 seconds and goes back to the menu screen 2.

(*2) ON/OFF time can be set also on a day cross-over basis. Setting the time earlier than an ON time as an OFF time makes the day cross-over setting.

(*3) At this time, when 1 (Yes) is selected, it is possible to set Monday through Sunday individually.

b. Setting by a day of the week

Procedures 1 - 6 are the same as those in “a. Collective setting”.

Procedure	Operation
7	Press a copy quantity setting button 2 (each day of the week) and a set/F1 button to set Monday through Sunday individually. <ON / OFF SETTING> INPUT TIME (MON) 0 8 : 3 0 ON TIME 1 8 : 0 0 OFFTIME
8	Input ON time for Monday with a copy quantity setting button in the order of hour (24 hours)/minute, and press a set/F1 button. Successively, input OFF time for Monday with a copy quantity setting button in the order of hour (24 hours)/minute, and press a set/F1 button. (*4) <ON / OFF SETTING> INPUT TIME (SAT) 0 8 : 3 0 ON TIME 1 8 : 0 0 OFFTIME
9	Repeat Item 8 to set ON/OFF time for Tuesday through Sunday individually. <ON / OFF SETTING> SETTING COMPLETION
10	Display is for about 3 seconds and goes back to the menu screen 2.

(*4) ON/OFF time can be set also on a day cross-over basis. Setting the time earlier than an ON time as an OFF time makes the day cross-over setting.

8. Lunch break OFF function

The lunch break OFF time is common to all days of the week, and only one lunch break OFF time can be set.

Procedure	Operation
1	Press a timer setting button to call a menu screen 1.
2	Press a copy quantity setting button 2 (weekly timer ON/OFF) to call a menu screen 2.
3	Press a copy quantity setting button 1 (to use) and a set/F1 button to call a menu screen 2. 1 : TIMER SETTING 2 : LUNCH TIME OFF 3 : HOLIDAY SETTING 4 : EXIT
4	Press a copy quantity setting button 2 (lunch break OFF function). <LUNCH TIME OFF> SELECT 1 OR 2 1 : USE 2 : NON – USE 1
5	Press a copy quantity setting button 1 (to use). (*1) <LUNCH TIME OFF> INPUT TIME 0 8 : 3 0 OFFTIME 1 3 : 0 0 ON TIME
6	Input the start time for the lunch break OFF function with a copy quantity setting button in the order of hour (24 hours)/minute, and press a set/F1 button. Successively, input the end time for the lunch break OFF function with a copy quantity setting button in the order of hour (24 hours)/minute, and press a set/F1 button. <LUNCH TIME OFF> SETTING COMPLETION
7	Display is for about 3 seconds and goes back to the menu screen 2.

(*1) The lunch break OFF function can be released by pressing a copy quantity setting button 2 (not to use).

9. Operation designation day

ON/OFF of the specific day which is different from the contents registered in timer hour setting is set.

Procedure	Operation
1	Press a timer setting button to call a menu screen 1.
2	Press a copy quantity setting button 2 (weekly timer ON/OFF) to call a menu screen 2.
3	Press a copy quantity setting button 1 (to use) and a set/F1 button to call a menu screen 2. 1 : TIMER SETTING 2 : LUNCH TIME OFF 3 : HOLIDAY SETTING 4 : EXIT
4	Press a copy quantity setting button 3 (operation designation day). <HOLIDAY SETTING> SELECT 1 OR 2 1 : TIMER 2 : DAY OFF 14/07/95 (FRI) 1
5	The specific day which is different from the contents registered in timer hour setting is selected Operation button • Enlargement button: To advance to the following day • Reduction button: To go back to the preceding day • P+enlargement button: To advance to the first day of the following month •P+reduction button: To go back to the first day of the preceding month <HOLIDAY SETTING> SELECT 1 OR 2 1 : TIMER 2 : DAY OFF 14/07/95 (FRI) 1
6	When ON/OFF controlling the selected specific day, press a copy quantity setting button 1 (to use a timer). When making the whole day to be OFF, press a copy quantity setting button 2 (whole day OFF). <HOLIDAY SETTING> SELECT 1 OR 2 1 : TIMER 2 : DAY OFF 14/07/95 (FRI) 2
7	When changing the operation designation day to the other day, repeat Item 5 and 6.
8	After completing the change of the operation designation day fully, press a copy button. <HOLIDAY SETTING> SETTING COMPLETION
9	Display is for about 3 seconds and goes back to the menu screen 2.

10.Forced mode

a. Forced starting mode

In the case of OFF made by a weekly timer, power for the main body is turned ON forcedly.

Procedure	Operation
1	In the case of an ON monitoring mode (main body OFF), press a timer releasing button. When a password is not registered, advance to Item 3. (*1) <TIMER INTERRUPT> ENTER PASSWORD * * * *
2	Input a password with a copy quantity setting button, and press a set/F1 button. INPUT USAGE TIME THEN PRESS SET 03 : HOUR 20 : MINUTE
3	Input a period of time to be ON after the forced start in the order of hour/minute, and press a set/F1 button. PLEASE WAIT -- WARMING UP 14/07/95 (FRI) 20:30
4	After the main body is started, copying is ready.
5	After the established time period has passed, power for the main body is turned OFF to go back to the ON monitoring mode (main body OFF).

(*1) See page 1-20 for the method of registering a password.

b. Forced OFF mode

In this function, it is possible to turn OFF power for the main body without turning off the main switch when a weekly timer is in an OFF time monitoring mode or during the forced starting.

Procedure	Operation
1	Press a timer releasing button in an OFF monitoring mode (main body ON). <TIMER INTERRUPT> OFF THE POWER ? 1 : YES 2 : NO
2	Press a copy quantity setting button 1 (Yes). An ON time monitoring mode is established and power for the main body is turned OFF.

11.Setting a password for a weekly timer

A weekly timer function can operate even when a password is not registered. When a password is registered, input of the password is required in the case of setting of a weekly timer and a forced start mode.

The password is inputted by a serviceman in a 47-160 mode. (See the adjustment manual.)

Procedure	Operation
1	47 mode-code 160 is used for setting. <W. T. PASSWORD SET> INPUT 4 DIGIT 1 2 3 4
2	A password (4 digits) is inputted with a copy quantity setting button. (*1) <W. T. PASSWORD SET> SETTING COMPLETION

(*1) Password "0000" is defined to be no setting of a password.

[12] E.K.C. (Electronic Key Counter) Mode

The present machine is equipped with an E.K.C. function with which an individual user or each group sets a password to control the copy quantity.

The E.K.C. mode is divided into a user mode and an operator mode.

a. User mode

This mode is used to perform a normal copy operation when the E.K.C. has been selected.

b. Operator mode

The following items to be controlled by E.K.C. are set and confirmed.

(1) Setting of a password (256 kinds are registerable)
(2) Setting of limit quantity
(3) Reading copy count and limit quantity
(4) Resetting copy count

c. Preparation for using an E.K.C. mode

For using an E.K.C. mode, the following settings are necessary.

E.K.C. selection (operation setting in the case of limit) (*1)
↓
Master key code setting (*2)
↓
Password/limit quantity setting

*1: Operations to be done when a copy count reaches the limit quantity include the following three types.
For the method of setting, see "Self-diagnosis/25 mode".

Warning only	When the limit quantity is exceeded, warning is given but copying is possible.
Natural stop	When the limit quantity is exceeded in the course of continuous copying, it is prohibited to copy after completion of the copy quantity set.
Forced stop	When the limit quantity is exceeded in the course of continuous copying, copying is stopped instantly and it is prohibited to copy.

*2: For the method of setting, see "Self-diagnosis/25 mode".

1. How to operate an E.K.C. operator mode

(1) Press a copy quantity setting button 9 while pressing a P button.

(2) Input the master key code with a copy quantity setting button

```
ENTER  YOUR  MASTER KEY CODE
                    ********
```

(3) When the correct master key code is inputted, an E.K.C. operator mode is established.

```
E. T. C.  OPERATION  MODE
```

(4) Input the numbers of items to be set and confirmed, using a copy quantity setting button, and press a copy button.

1: Setting of a password
2: Setting of a limit quantity
3: Reading of copy count and limit quantity
4: Resetting of copy count

(5) Various settings and confirmations

(6) Press a stop/clear button to return to the E.K.C. operator mode.

(7) Press the stop/clear button while pressing a P button to get out of the E.K.C. operator mode.

2. Password setting

Procedure	Operation
1	Establish an E.K.C. operator mode.
2	Press a copy quantity setting button 1. `1 : PASSWORD  SET`

3	Press a copy button.
	`NO.  0 0 1`
	`PASSWORD  0 0 0 0 0`

4	Select the registration number with an enlargement button and a reduction button.
	`NO.  0 0 1`
	`PASSWORD  0 0 0 0 0`
	Registration No.: No. 01 - No. 20

5	Set the password with a copy quantity setting button.
	`NO.  0 0 1`
	`PASSWORD  1 2 3 4 5`
	Password: 5 digits (Example: 12345)

6	When registering other passwords, repeat the operations of Items 4 and 5.
7	Return to the E.K.C. operator mode.
8	Succeedingly, conduct other setting or get out of the E.K.C.operator mode.

3. Limit quantity setting

Procedure	Operation
1	Establish an E.K.C. operator mode.
2	Press a copy quantity setting button 2. 2 : LIMIT COUNT SET
3	Press a copy button. NO. 001 LIMIT 000000
4	Designate the registration number with an enlargement button and a reduction button. NO. 003 LIMIT 000000
5	Set the limit quantity with a copy quantity setting button, and press a copy button. NO. 003 LIMIT 0150000 Maximum quantity to be set: 999,999 sheets (Example: 25,000 sheets)
6	When setting other limit quantities, repeat the operation of Item 4 and 5.
7	Return to the E.K.C. operator mode.
8	Succeedingly, conduct other setting or get out of the E.K.C. operator mode.

4. Copy count, limit quantity reading

Procedure	Operation
1	Establish an operator mode.
2	Press a copy quantity setting button 3. 3 : COUNT READ–OUT
3	Press a copy button. NO. COUNT / LIMIT 001 0000050/0150000
4	Select the registration number with an enlargement button and a reduction button for confirming copy count and limit. NO. COUNT / LIMIT 001 000050/0150000 (Example: The limit quantity is set to 150,000, and 50 copies have been made.)
5	When confirming other registration numbers, repeat the operations of Item 4.
6	Return to the E.K.C. operator mode.
7	Succeedingly, conduct other setting or get out of the E.K.C. operator mode.

5. Resetting copy count

Resetting of copy count includes the following two types.

(1) All reset
(2) Individual reset

a. All reset

All counts are reset collectively.

Procedure	Operation
1	Establish an E.K.C.operator mode.
2	Press a copy quantity setting button 4. 4 : COUNTER RESET
3	Press a copy button. (See *1.) CLEAR ALL COUNTERS YES / NO ?
4	Press a copy button. CLEAR ALL COUNTERS ! !
5	Return to the E.K.C. operator mode.
6	Succeedingly, conduct other setting or get out of the E.K.C.operator mode.

*1: When canceling the reset of copy count (in the case of "NO"), press a stop/clear button twice to go back to the operator mode.

b. Individual reset

Specific registration numbers are reset.

Procedure	Operation
1	Establish an E.K.C.operator mode.
2	Press a copy quantity setting button 4. 4 : COUNTER RESET
3	Press a copy button. CLEAR ALL COUNTERS YES / NO ?
4	Press a stop/clear button. NO. 0 0 1 : COUNT CLEAR YES / NO ?
5	Select the registration number to be reset with an enlargement button and a reduction button, and press a copy button. NO. 0 0 7 : COUNT CLEAR
6	When clearing other registration numbers, repeat the operation of Item 5.
7	Return to the E.K.C. operator mode.
8	Succeedingly, conduct other setting or get out of the E.K.C.operator mode.

[13] Auto Shut Off Setting

When operations of an operation panel and copying are not executed for a certain period of time, all display LEDs on the operation panel are turned off. This time period is set in "Adjustment manual/25 mode".

0: None
1: 2 minutes
2: 6 minutes
3: 10 minutes

Note: Also valid in pre-heating mode.

[14] Auto Reset

When operations of an operation panel and copying are not executed for a certain period of time, the main body is returned to its initial state. This time period is set in "Adjustment manual/ 25 mode".

0: None
1: 1.5 minutes
2: 1.5 minutes

Note: Also valid in pre-heating mode.

Initial state

Display	State
Copy quantity	1
ADF	Flashing (in the case of auto priority mode)
APS	Lighting (in the case of auto priority mode)
AE	Lighting (in the case of auto priority mode)
1:1	Lighting
Sorter	Lighting (in the case of auto priority mode)
Paper size	Lighting of all sixes of papers set
Magnification	1.00
Magnification mode	Fixed lighting
Copy density	Light-out (in the case of auto priority mode)
Specific function	Light-out (in the case of auto priority mode)
Sort/group	Sort lighting (in the case of sorter priority mode)
Paper feed location	All paper feed locations for set papers lighting

COUNT NUMBER CONFIRMATION

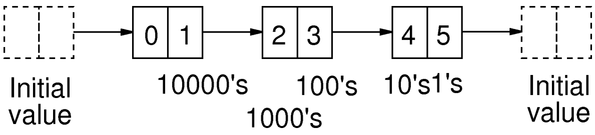
[1] PM Count

1. Press a copy quantity setting button 5 while pressing a P button.
2. A PM count number is displayed on a message display.
3. For the method of resetting, see “Setting and confirmation by Adjustment manual/P function”.

[2] Drum Count

1. Press a copy quantity setting button 7 while pressing a P button.
2. A drum count number is displayed on a message display.

   Also on a copy quantity display, the number is indicated by being divided into three each including 2 digits from the higher position.
   (Example) The number of the drum count is 12345.



3. For the method of resetting, see “Adjustment manual/setting and confirmation by P function”.

MESSAGE LIST

Messages in the table below are displayed on a message indicator of the present machine, depending on the conditions of the machine.

1. Each symbol in the table means as follows.

(1) "N" in the column of types indicates that the machine keeps displaying the same message until the machine enters its another state.
(2) "S" in the column of types is a temporary display which lasts for 3 seconds.
(3) "NS" in the column of types means a display in combination with other messages.
(4) "A" in the column of types indicates that two messages are displayed alternately.
(5) "AN" in the column of types indicates that the machine keeps displaying the same message until the machine enters its another state.

[1] Bases

No.	Types	Machine state	Message
1 - 1	N	Under warm-up	PLEASE WAIT – –WARMING UP
1 - 2	N	Ready for copy	READY TO COPY
1 - 3	N	Under copying	COPYING
1 - 4	N	In process of auto shut off	STAND–BY MODE PRESS ANY KEY
1 - 5	N	Under pre-heating mode	

[2] Warning

1. Main body

No.	Types	Machine state	Message
2 - 1 - 1	N	No paper for by-pass feed (after stop with no paper)	PLEASE SUPPLY PAPER IN BY–PASS TRAY
2 - 1 - 2	NS	Toner empty	READY TO COPY PLEASE SUPPLY TONER
2 - 1 - 3	NS	Toner empty	COPYING PLEASE SUPPLY TONER
2 - 1 - 4	NS	PM count over (periodic inspection)	ROUTINE SERVICE REQD
2 - 1 - 5			PLEASE SELECT COPY QUANTITY
2 - 1 - 6	N	Under PFU, or the state of no paper in 1500-sheet LCT tray	PLEASE SUPPLY PAPER IN DRAWER [4]
2 - 1 - 7	N	Key counter OFF (for coping with a convenience store)	PLEASE INSERT KEY COUNTER
2 - 1 - 8	N	Card OFF (for coping with a convenience store)	
2 - 1 - 9	N	Coin OFF (for coping with a convenience store)	

No.	Types	Machine state	Message
2 - 1 - 10	N	No selected tray [A4R]	INSERT [A 4] DRAWER–IF REQUIRED
2 - 1 - 11	N	Tray is set neither on the main body nor on a PFU.	PLEASE INSERT A DRAWER
2 - 1 - 12	N	Paper is set neither on upper tray nor on lower tray in main body and PFU.	PLEASE SUPPLY PAPER
2 - 1 - 13	S	No corresponding size in APS	PLEASE SUPPLY [A 4 R] PAPER
2 - 1 - 14	N	No paper in tray (after stop with no paper)	
2 - 1 - 15	N	No tray, or no 1500-sheet LCT tray	
2 - 1 - 16	N	8 x 13 size DATA	8 x 1 3 / F 4
2 - 1 - 17	S	When a magnification button or an enlargement/reduction button is pressed in an image shift copy mode	RE NOT AVAILABLE IN IMAGE SHIFT MODE
2 - 1 - 18		Memory card OFF in the machine with a memory card	PLEASE INSERT MEMORY CARD
2 - 1 - 19	N	On the occasion of occurrence of P 17.	PLEASE COLOSE TOP RIGHT SIDE COVER
2 - 1 - 20	N	On the occasion of occurrence of P 33.	PLEASE CLOSE LEFT SIDE COVER
2 - 1 - 21	N	On the occasion of occurrence of P 18 and P 19.	PLEASE CLOSE BOTTOM RIGHT SIDE COVER
2 - 1 - 22	N	On the occasion of occurrence of P 51.	FRONT DOOR IS OPEN PLEASE CLOSE
2 - 1 - 23			PLEASE EMPTY DUPLEX TRAY
2 - 1 - 24			THIS CARD IS UNACCEPTABLE
2 - 1 - 25		Over loading on LCT	WITHDRAW [3] TRAY – REDUCE PAPER
2 - 1 - 26	S	When a copy button is pressed with two sides selected under indeterminate form of upper tray in by-pass feed	DUPLEX UNAVAILABLE IN BYPASS / IRREGULAR
2 - 1 - 27	S	When a copy button is pressed with B6 size and two sides selected	DUPLEX UNAVAILABLE IN 5 . 5 x 8 . 5 SIZE
2 - 1 - 28		On the occasion of occurrence of E (error requiring power OFF)	PLEASE SW ON / OFF [4 7 – 0 1]
2 - 1 - 29		When trying to select a prohibited function	[UNAVAIL : PLATEN MEM.] [SELECTING 2 IN 1]

No.	Types	Machine state	Message
2 - 1 - 30		On the occasion of memory overflow (when completing a part in the case of real time output) When it is impossible to recover under a look-ahead mode	MEMORY FULL
2 - 1 - 31		In the case of memory overflow (under no page change in a two-sided original/duplex copy mode) Alternating display of "OVR3"	MEMORY FULL
2 - 1 - 32		In the case of memory overflow (under no page change in a two-sided original/duplex copy mode) Alternating display of "OVR2"	PRESS START TO COPY STORED IMAGES ONLY
2 - 1 - 33		After memory over, when completing output for what has been read	ALIGN REMAINING ORIGINALS
2 - 1 - 34			MEMORY FULL PRESS CLR TO CLR

2. ADF

No.	Types	Machine state	Message
2 - 2 - 1	N	No original is set on ADF (ADF mode)	PLEASE INSERT ORIGINAL–FACE DOWN
2 - 2 - 2			REMOVE AND RELOAD ORIGINALS
2 - 2 - 3	N	ADF mode, after clearing jam in the main body	RELOAD [2] ORIG FACE DOWN –PRESS PRINT
2 - 2 - 4	N	A cover for RADF reversal section is opened.	PLEASE CLOSE RADF REVERSING UNIT COVER
2 - 2 - 5	N	Singular number expression of ADF 3 message (ADF 3 is singular/plural number and wording is different)	
2 - 2 - 6			PLEASE CLOSE DOCUMENT FEEDER

3. Finisher

No.	Types	Machine state	Message
2 - 3 - 1	S	When the set quantity exceeds the limit in a sort mode	MAX. [2 5] COPIES IN SORT MODE
2 - 3 - 2	S	When the set quantity exceeds the limit in a group mode	MAX. [1 0] COPIES IN GROUP MODE
2 - 3 - 3	A	On the occasion of occurrence of P 71.	PLEASE CLOSE SORTER ENTRANCE COVER
2 - 3 - 4	A	On the occasion of occurrence of P 71.	PLEASE CONNECT SORTER TO THE COPIER
2 - 3 - 5	A	On the occasion of occurrence of P 71.	PLEASE CLOSE SORTER UPPER / ENTRANCE COVER
2 - 3 - 6	N	Under operation of a sorter	PLEASE WAIT –SORTER BINS MOVING

No.	Types	Machine state	Message
2 - 3 - 7	S	When no staple is detected under stapling operation	OPEN STAPLER DOOR –SUPPLY STAPLES
2 - 3 - 8	A	On the occasion of occurrence of P 99.	PLEASE REMOVE COPIES FROM SORTER
2 - 3 - 9	S	When the effective number of sheet for stapling is exceeded	STAPLE–MAX. [2 5] SHEETS PLEASE REDUCE / REMOVE
2 - 3 - 10	S	When sizes of papers to be stapled are not the same	STAPLER UNAVAILABLE PLEASE REMOVE PAPER
2 - 3 - 11	A	On the occasion of occurrence of P 99.	OPEN STAPLER DOOR AND RELOAD STAPLER
2 - 3 - 12	S	When the staple cartridge is not inserted surely	OPEN STAPLER DOOR AND CHECK STAPLER
2 - 3 - 13			PLEASE CLOSE FINISHER COVRE
2 - 3 - 14			CONNECT FINISHER TO THE COPIER
2 - 3 - 15			PLEASE WAIT FINISHER MOVING
2 - 3 - 16			PLEASE REMOVE COPIES FROM THE FINISHER
2 - 3 - 17			STAPLING UNAVAILABLE WITH [BY–PASS]
2 - 3 - 18			STAPLE MAX [2 5] COPIES

4. ADU

No.	Types	Machine state	Message
2 - 4 - 1	N	When paper exists on a stacker before the duplex copy mode is started	PLEASE EMPTY DUPLEX TRAY
2 - 4 - 2	N	When the number of sheets set is “0”	PLEASE SELECT COPY QUANTITY
2 - 4 - 3	NS	Right side in the case of duplex copying	–SIDE 1
2 - 4 - 4	NS	Reverse side in the case of duplex copying	–SIDE 2
2 - 4 - 5	A	When the size prohibited in a duplex copy mode is selected and a copy button is pressed in the duplex copy mode (in process of display of “P.97”)	PLEASE SELECT PAPER SIZE FROM DRAWERS
2 - 4 - 6	S	When a size button is pressed on the half way of a duplex copy mode	PAPER SIZE CANNOT BE CHANGED NOW

No.	Types	Machine state	Message
2 - 4 - 7	S	When a copy quantity setting button is pressed on the half way of the duplex copy mode	COPY QUANTITY CANNOT BE CHANGED NOW
2 - 4 - 8	N	On the occasion of occurrence of P 91.	PLEASE RESET DUPLEX UNIT

[3] Interruption Copy

No.	Types	Machine state	Message
3 - 1	S	When the machine is in an interruption mode	COPYING INTERRUPTED
3 - 2	N	In process of interruption copying	COPY INTERRUPT IN PROGRESS
3 - 3	S	When the machine is restored from an interruption mode	COPY INTERRUPT IS COMPLETED

[4] P Function

No.	Types	Machine state	Message
4 - 1	A	Under an arbitrary magnification setting mode P+ magnification button	SET SPECIAL RATIO BY KEY PAD (0.50 −− 4.00)
4 - 2	S	P+1	TOTAL COUNT : [00150000] START DATE : [95/07/14]
4 - 3	S	P+5	PM : [050000] / [150000] START DATA : [95/07/14]
4 - 4	S	When a frame erasure mode is selected	FRAME ERASURE −− [10] mm PRESS " P " TO ADJUST
4 - 5	N	Under a frame erasure amount setting mode	SELECT PRAME ERASURE BY KEY PAD–5 , 10 , 15 mm
4 - 6	N	Under a frame erasure amount setting mode	FRAME ERASURE −− [10] mm PRESS " P " TO SET
4 - 7	S	P+8	SERIAL NO. : [0123] ROM VERS. : [02]
4 - 8	A	Under an arbitrary magnification setting mode P+ magnification button	PRESS " P " TO SET PRESS STOP TO CLEAR
4 - 9	N	Setting a mode number with Power ON st button while pressing 2 and 5 buttons	P–MODE : P [14] [0] [3]
4 - 10	N	Under a fold erasure amount setting mode	SELECT FOLD ERASURE BY KEY PAD 10 , 20 , 30 mm
4 - 11	N	Under a fold erasure amount setting mode	FOLD ERASURE −− [10] mm PRESS " P " TO SET
4 - 12	S	When a fold erasure mode is selected	FOLD ERASURE −− [10] mm PRESS " P " TO ADJUST

No.	Types	Machine state	Message
4 - 13	S	P+ 7	DRUM COUNT : [1 2 0 0 0 0]
4 - 14	N	P+ 9 in an EKC mode	ENTER YOUR MASTER KEY CODE [* * * * * * * *]
4 - 15		Development count display	DEV COUNT : [0 2 0 2 0 2]

[5] Jam

No.	Types	Machine state	Message
5 - 1	S	Immediately after jam occurrence	PAPER MISFEED - REFER TO PAPERFLOW DISPLAY
5 - 2	AN	On the occasion of occurrence of J11, J12, J13 and J14	
5 - 3	N	On the occasion of occurrence of J10	
5 - 4	N	On the occasion of occurrence of J15, J94 and J95	
5 - 5	N	On the occasion of occurrence of J11, J12 and J17	
5 - 6	N	On the occasion of occurrence of J13, J14 and J19	
5 - 7	A	On the occasion of occurrence of J92 and J93	
5 - 8	A	On the occasion of occurrence of J92 and J93	
5 - 9	A	On the occasion of occurrence of J93	
5 - 10	N	On the occasion of occurrence of J61, J62 and J63	PLEASE REMOVE ORIG . FROM PLATEN GLASS
5 - 11	A	On the occasion of occurrence of J63	
5 - 12	A	On the occasion of occurrence of J72	
5 - 13	N	On the occasion of occurrence of J16, J31 and J32	
5 - 14			
5 - 15		On the occasion of occurrence of J19	
5 - 16		On the occasion of occurrence of J72	

No.	Types	Machine state	Message
5 - 17			
5 - 18			
5 - 19		Jam code display (lower)	J [1 0 - 0 1]

[6] Troubles

No.	Types	Machine state	Message
6 - 1	N	On the occasion of occurrence of F trouble	PLEASE CALL SERVICE & REPORT CODE [2 2 - 0 1]
6 - 2		In the case of limited use (upper tray trouble) [Display on lower VFD]	PRESS F3 TO BYPASS TRAY 1 MALFUNCTION
6 - 3		In the case of limited use (lower tray trouble) [Display on lower VFD]	PRESS F3 TO BYPASS TRAY 2 MALFUNCTION
6 - 4		In the case of limited use (LCT right side trouble) [Display on lower VFD]	PRESS F3 TO BYPASS TRAY 3 MALFUNCTION
6 - 5		In the case of limited use (LCT left side trouble) [Display on lower VFD]	PRESS F3 TO BYPASS TRAY 4 MALFUNCTION
6 - 6		In the case of limited use (ADF trouble) [Display on lower VFD]	PRESS F3 TO BYPASS ADF MALFUNCTION
6 - 7		In the case of limited use (ADU trouble) [Display on lower VFD]	PRESS F3 TO BYPASS ADU MALFUNCTION

[7] Adjustment

No.	Types	Machine state	Message
7 - 1	N	Input/output check mode (input)	I / O CHECK MODE INPUT : [0 0 1]
7 - 2	N	Input/output check mode (output)	I / O CHECK MODE OUTPUT : [0 5 5]
7 - 3	N	Power check mode (for process)	* POWER CHECK MODE *
7 - 4	N	Lengthwise magnification adjustment	MAGNIFI ADJ (LENGTH) [0 6] [0 2]
7 - 5	N	Widthwise magnification adjustment	MAGNIFI ADJ (WIDTH) [0 6] [0 2]
7 - 6	N	Leading edge timing adjustment (E-RDH)	REGISTRATION (1) ADJ [0 5] [0 8]
7 - 7	N	Leading edge timing adjustment (copy)	REGISTRATION (2) ADJ [0 5] [0 8]

No.	Types	Machine state	Message
7 - 8		Leading edge timing adjustment (printer)	REGISTRATION (3) ADJ [10] [20]
7 - 9	N	Original image missing amount adjustment	IMAGE MISSING ADJ [05] [08]
7 - 10	N	Original image missing amount enlargement/reduction adjustment	IMAGE MISSING RE ADJ [05] [08]
7 - 11	N	Paper feed loop amount adjustment	LOOP ADJ [BYPASS] [05] [08]
7 - 12	N	Optics brake amount adjustment	BRAKE ADJ [+1] [–2]
7 - 13		Under light distribution adjustment	SHADING [7899978877] MAX : [200] MIN : [125]
7 - 14		When adjusting centering error/right side	H _ VALID ADJ – SIDE 1 – [02] [06]
7 - 15		When adjusting centering error/A5R	H _ VALID ADJ –5.5X8.5– [02] [06]
7 - 16		When adjusting laser 1/offsetting	LASER 1 OFFSET ADJ [02] [06]
7 - 17		When adjusting laser 1/offsetting	LASER 2 OFFSET ADJ [02] [06]
7 - 18		At the end of process adjustment (normal)	ADJ OK
7 - 19		At the end of process adjustment (abnormal)	ADJ N.G

[8] Electronic Key Counter

No.	Types	Machine state	Message
8 - 1	N	Pass word input mode	ENTER YOUR PASSWORD [∗∗∗∗∗]
8 - 2	S	Pass word input → Count NOT OVER	COPIES MADE / LIMIT [012500]/[150000]
8 - 3	S	After copying ending, Pass word input → Count OVER	EXCEEDS LIMIT [15010]/[150000]
8 - 4	N	E.K.C. operator mode	E.K.C. OPERATION MODE
8 - 5	N	Pass word setting mode	1 : PASSWORD SET
8 - 6	N	Limit setting mode	2 : LIMIT COUNT SET
8 - 7	N	Count/limit reading mode	3 : COUNT READ - OUT

No.	Types	Machine state	Message
8 - 8	N	Count reset mode	4 : COUNTER RESET
8 - 9	N	Print out mode	5 : EKC PRINT OUT MODE
8 - 10	N	Pass word setting	NO . [0 0 1] PASSWORD [1 2 3 4 5]
8 - 11	N	Limit setting	NO . [0 0 2] LIMIT [1 5 0 0 0 0]
8 - 12	N	Count/limit reading	NO . COUNT / LIMIT [0 1] [1 2 3 4 5 6 7 7] / [1 2 3 4 5 6 7 8]
8 - 13	N	All counts clear mode	CLEAR ALL COUNTERS YES / NO ?
8 - 14	S	All counts clear	CLEAR ALL COUNTERS ! !
8 - 15	N	Each user count clear mode	NO . [0 0 7] : COUNT CLEAR YES / NO ?

[9] Book Copy • Inter-sheet • Chapter Sectioning • Insertion Page

No.	Types	Machine state	Message
9 - 1	A	When sizes other than A4, B5 and 8 1/2 x 11 or by-pass feed are selected in book copying	SELECT A4 OR B5 SIZE FOR DUAL PAGE COPY
9 - 2	N	In the case of no paper under by-pass feed in book copying	PLEASE SUPPLY A4 OR B5 PAPER IN BY - PASS
9 - 3	S	When a magnification mode button or an enlargement • reduction button is pressed in book copying	RE NOT AVAILABLE WITH DUAL PAGE COPY
9 - 4		Book memory/book copy	COPY KEY : START SET KEY : SCAN
9 - 5		When an inter-sheet button is pressed	SHEET INSERTION MODE SIZE IS [A3]
9 - 6		In process of selecting an inter-sheet mode	SELECT PAGE NUMBERS [1 / 5 /1 3 / 2 5]
9 - 7		In the case of no paper having the same size as an insertion paper in an inter-sheet mode	SUPPLY [A4] PAPER IN DRAWER 2 , 3 OR 4
9 - 8		When an inter-sheet mode is selected in an interruption mode or in an operation break	OHP / SHEET INSERTION NOT AVAILABLE
9 - 9		When a copy mode button or a sorter button is pressed in a break of an inter-sheet mode	THESE MODES CANNOT BE CHANGED NOW
9 - 10		When RADF in an inter-sheet mode is opened at the end of the inter-sheet mode	SHEET INSERTION MODE IS DISENGAGED
9 - 11		When an input is completed in an inter-sheet setting mode	POSITIONS CHOSEN ARE [1 / 5 / 1 3 / 2 5]

No.	Types	Machine state	Message
9 - 12		When an inter-sheet mode button is pressed	COPY INSERTION MODE SIZE IS [A3]
9 - 13		When RADF in an inter-sheet copy mode is opened at the end of the inter-sheet copy mode	COPY INSERTION MODE IS DISENGAGED
9 - 14		When an inter-sheet (cover mode) is selected	SHEET INSERTION MODE BLANK FR . & BK . COVERS
9 - 15		When an inter-sheet copy (cover mode) is selected	SHEET INSERTION MODE COPY FR . & BK . COVERS
9 - 16		When a chapter sectioning mode is selected	CHAPTERIZATION MODE
9 - 17		When a chapter sectioning mode is selected	CHAPTERIZATION MODE IS RELEASED
9 - 18		When an insertion page is selected	INSERT PAGE MODE
9 - 19		When an insertion page is released	INSERT PAGE MODE IS RELEASED
9 - 20		When an insertion page original is read	PRESS SET TO SCAN RADF ORIGINALS

[10] OHP Interleave • Shift • Single Step • Density Monitor • Repeat Mode

No.	Types	Machine state	Message
10 - 1		In the case of no OHP film in a by-pass feed tray when an OHP interleave mode is selected	PLEASE SUPPLY OHP SHEET IN BY - PASS
10 - 2			
10 - 3		When a copy quantity set exceeds the upper limit (one sheet) in an OHP interleave mode	MAX . 1 COPY IN OHP INTERLEAVE MODE
10 - 4		When an OHP interleave mode 1 is selected	OHP MODE
10 - 5		When an OHP interleave mode 2 is selected	OHP COPY MODE
10 - 6		In the case of shift copy setting 1	FRONT [1 0] mm BACK [1 0] mm PRESS " P " TO CHANGE
10 - 7		In the case of shift copy setting 2	FRONT SHIFT [1 0] mm PRESS " SET " TO SET
10 - 8		In the case of shift copy setting 3	BACK SHIFT [1 0] mm PRESS " SET " TO SET
10 - 9	A	At the end of output of single step 1 setting	OK TO CHAGE SORT / THIN - THICK / #COPIES

No.	Types	Machine state	Message
10 - 10	A	At the end of output of single step 1 setting	PRESS " START " TO COPY OR " AUTO / CLR " TO ABORT
10 - 11		In the case of density monitor (arbitrary density setting)	PRINT OUT SAMPLE PRESS START
10 - 12		Under image output in density monitor (arbitrary density setting)	NOW PRINTING SAMPLE
10 - 13		When setting density monitor (arbitrary density setting)	SELECT : TEN KEY [2] SET : SET KEY
10 - 14	A	When setting a repeat mode	SET REPEAT WIDTH [5 0] - mm
10 - 15	A	When setting a repeat mode	PRESS " SET " TO SET

[11] Job Memory

No.	Types	Machine state	Message
11 - 1	N	When setting with a copy quantity setting button the number of repetition of 36-03, 04, 13, 14 mode (intermittent mode)	REPEAT CYCLE : [0 7]
11 - 2	S	When making a job memory button to be ON for selecting a registration mode	JOB MEMORY REGISTER MODE
11 - 3	A	When the unregistered number exists when registering a job memory	PLEASE ENTER # (0 - 9)
11 - 4	S	At the end of job memory registration	JOB MEMORY # [7] REGISTERED
11 - 5	S	When making a job memory button to be ON for selecting a reading mode	JOB MEMORY RECALL MODE
11 - 6	A	When the registered number exists in a job memory reading mode	SELECT DESIRED # (0 - 9)
11 - 7	A	When the registered number is read in a job memory reading mode	JOB MEMORY # [1] RECALLED
11 - 8	S	At the end of job memory reading	JOB MEMORY # [2] SELECTED
11 - 9	S	When the unregistered number is read in a job memory reading mode	JOB MEMORY # [3] NOT REGISTERED
11 - 10	S	When a job memory can not be used (for example, interruption copying or a break on the half way)	JOB MEMORY NOT AVAILABLE NOW
11 - 11	A	When the unregistered number exists when registering a job memory	YOU CAN SELECT FROM [3 , 5 , 8 , 9]
11 - 12	A	When no unregistered number exists when registering a job memory	ALL # NOW IN USE
11 - 13	A	When no unregistered number exists when registering a job memory	REWRITE BY KEY PAD PRESS STOP TO CANCEL

No.	Types	Machine state	Message
11 - 14	A	In registration of a job memory, when the area for that registration number has already been registered	JOB MEMORY # [5] IN USE
11 - 15	A	In registration of a job memory, when the area for that registration number has already been registered	PRESS " P " TO REWRITE OR " STOP " TO RETRY
11 - 16	N	When setting the mode number with a copy quantity setting button while pressing 3 and 6 buttons or Power ON	RUNNING MODE : [0 1]
11 - 17	S	When no registered number exists in a job memory reading mode	JOB MEMORY NOT REGISTERED
11 - 18	A	When the registered number exists in a job memory reading mode	JOBS AVAILABLE : [1 , 2 , 4]
11 - 19	A	When the registered number is read in a job memory reading mode	PRESS " P " TO SET OR CHANGE # BY KEY PAD

[12] Others

No.	Types	Machine state	Message
12 - 1		When turning the power on without opening or closing an original cover and pressing a copy button in a platen APS mode	PLEASE CHECK ORIGINAL
12 - 2		When turning the power on without opening or closing an ADF and pressing a copy button in an APS mode	PLEASE CHECK ORIGINAL
12 - 3		DF-306 original position adjustment mode	ADF ADJ [1 0] [2 0]
12 - 4		When selecting lengthwise and widthwise magnifications independently (display at a lower step)	W : [1 2 5] % L : [2 0 0] %
12 - 5		E-RDH memory usage amount display (display at a lower step)	MEMORY : [5 0] %
12 - 6		When detecting the coming off of a connector for L detection	CONNECTOR IN DEVELOP UNIT IS DISCONNECTED
12 - 7		When A3 and A4 are not selected in selection of 2-in-1/4-in-1	SELECT A3 OR B4 SIZE FOR DUAL PAGE COPY
12 - 8		In KRDS communication error	KRDS ERROR [1]
12 - 9			MEMORY CAPA . : [1 0 0] MB
12 - 10		During image reading	SCANNING
12 - 11		During selecting an inserted page	SELECT PAGE NUMBERS [1 / 2 / 3 /]
12 - 12		During 2-in-1/4-in-1 is selected, when A3, B4, A4R and B5R are not selected.	PLEASE SELECT A3 / B4 / A4R / B5R
12 - 13		When a density shift level is set	DENS SHFT TEXT / PHOTO DARK : 1 – 5 : LIGHT - - [3] - -

2

PROCESS

2. PROCESS

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OUTLINE AND COMPOSITION

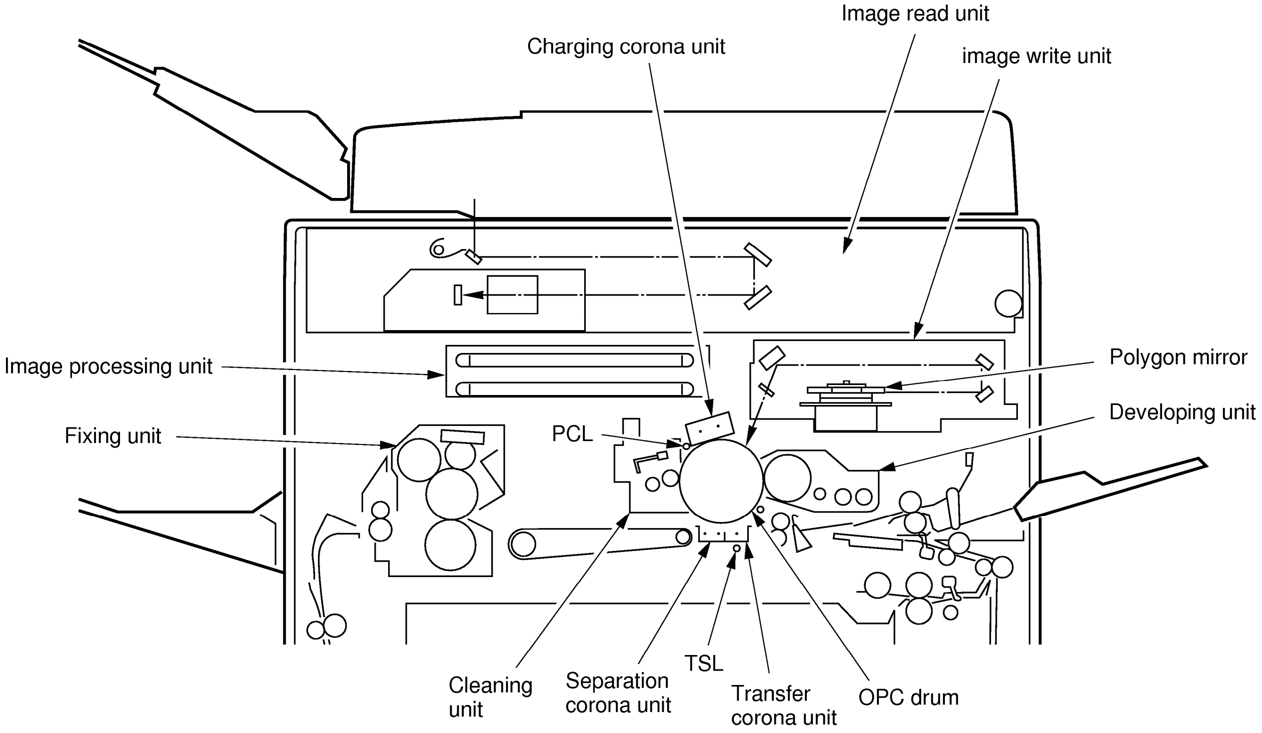


Image read unit
Charging corona unit
image write unit
Image processing unit
Polygon mirror
Developing unit
Fixing unit
PCL
Cleaning unit
Separation corona unit
TSL
Transfer corona unit
OPC drum

Fig.1

In this digital copying machine, optical data (light beam) reflected from the original is converted into electrical signals, subjected to image processing, then converted back into optical data (light beam) and directed onto the drum.
Figure 1 shows the composition of the machine, and Fig.2 an outline of the digital copying process.

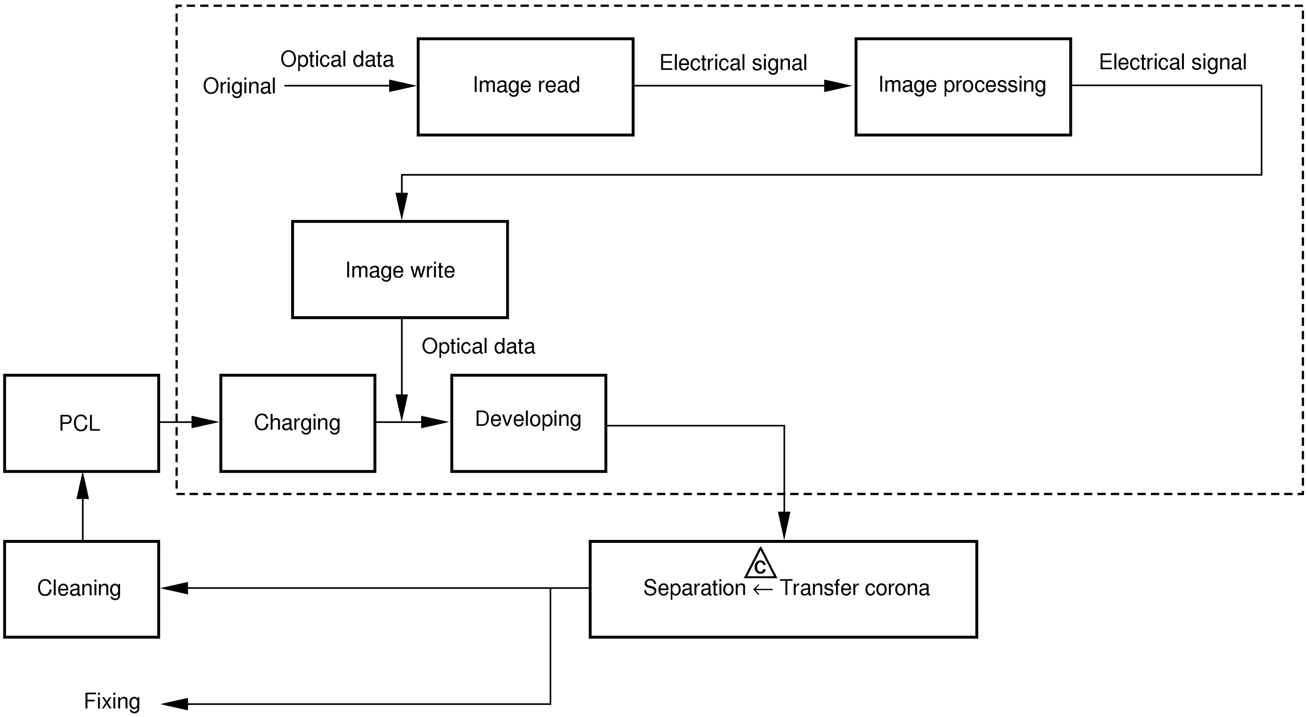

Original
Optical data
Image read
Electrical signal
Image processing
Electrical signal
Image write
Optical data
PCL
Charging
Developing
Cleaning
C
Separation ← Transfer corona
Fixing

Fig.2

IMAGE READ MECHANISM

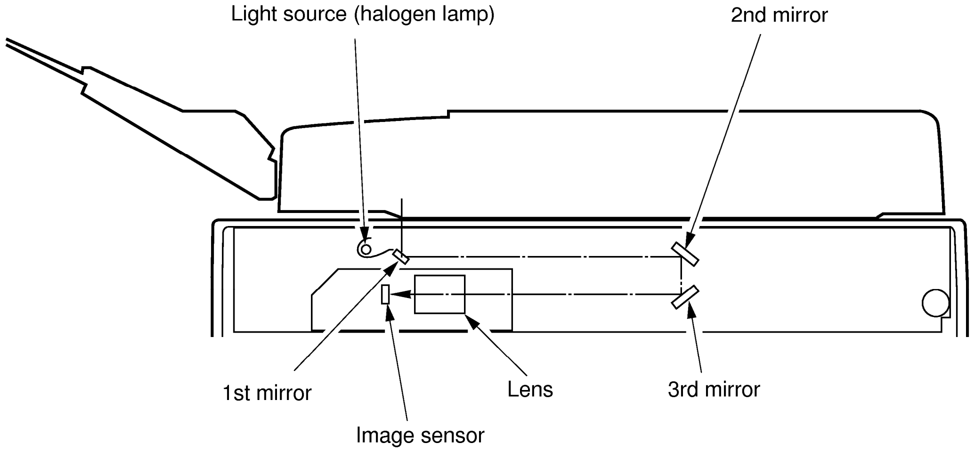

Light source (halogen lamp)
2nd mirror
1st mirror
Lens
3rd mirror
Image sensor

Fig.3

[1] Outline

A halogen lamp is used as the light source, and the light from the lamp is directed onto the original.

The light reflected off the original is reflected by the 1st, 2nd and 3rd mirrors shown in Fig.1, then passed through the lens and directed onto the CCD image sensor.

The CCD image sensor consists of 5000 pixels. One pixel is 7 µm in length, and the length on the original that can be read by one pixel is 63.5 µm.

IMAGE PROCESSING

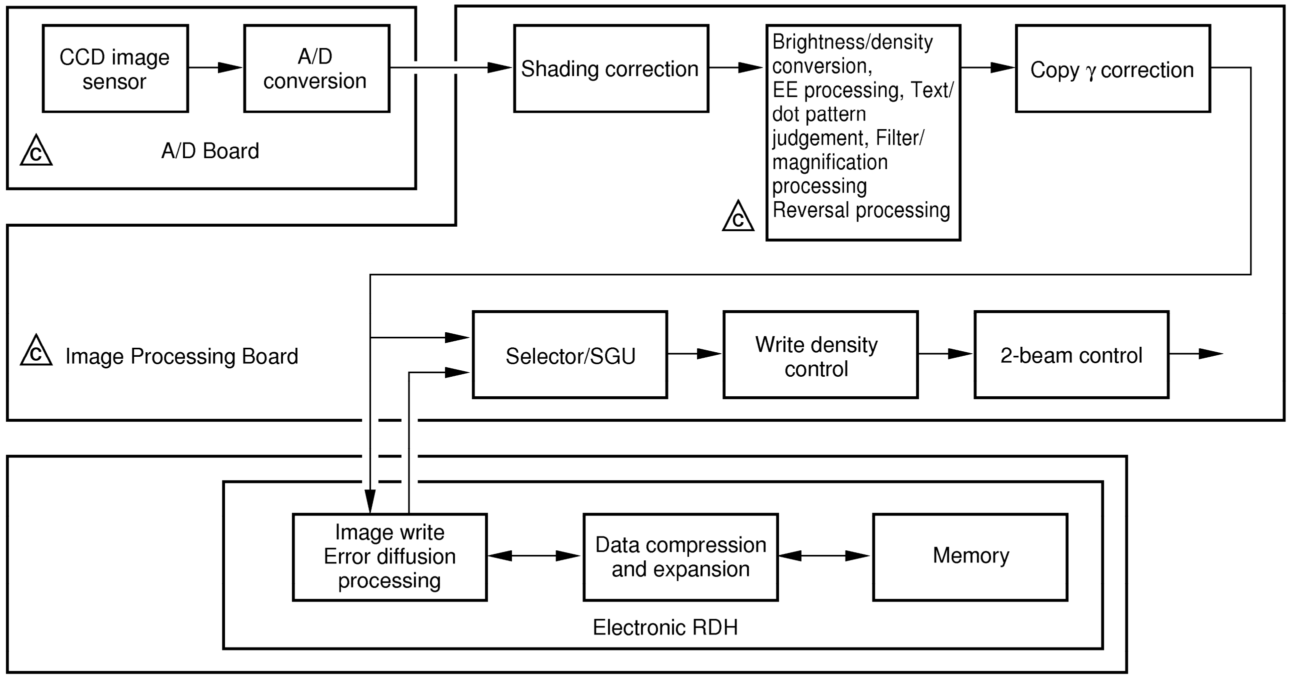

CCD image sensor
A/D conversion
A/D Board
Shading correction
Brightness/density conversion, EE processing, Text/ dot pattern judgement, Filter/ magnification processing Reversal processing
Copy γ correction
Image Processing Board
Selector/SGU
Write density control
2-beam control
Image write Error diffusion processing
Data compression and expansion
Memory
Electronic RDH

Fig.4

[1] Outline

The analog signal produced by opto-electric conversion by the CCD sensor on the A/D board is subjected to analog processing, then A/D-converted, and subjected to image processing.
Image processing consists of shading correction, brightness/ density conversion, EE processing, text/dot pattern judgement, filter/magnification change processing, copy γ correction, write density correction, and 2-beam control. In addition, error diffusion processing and data compression are carried out within electronic RDH.

[2] Analog Processing

In the analog processing board, the minute signals from the CCD sensor are amplified and also level-shifted into the A/D conversion range.
Amplification and level-shifting take place automatically at the shading correction timing by an electronic variable resistor, hence there is no need to perform manual adjustment.

[3] A/D Conversion

The image signals from the analog processing board are converted one pixel at a time into 9-bit digital signals.

[4] Shading Correction

Shading correction is done to even out the light distribution of the CCD sensor. The following correction takes place at the specified timing.

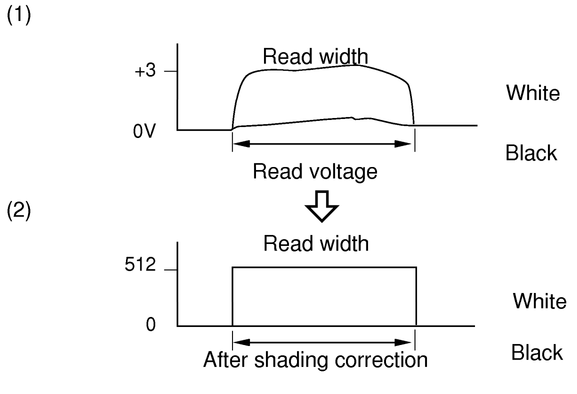
1. White correction

The voltage output from each pixel of the CCD sensor when the white reference plate is exposed to the light from the exposure lamp is memorized as the maximum output value for that pixel.

2. Black correction

The output voltage from each pixel of the CCD sensor when the exposure lamp is out is memorized as the minimum output voltage for that pixel.

* Based on the difference between the white and black data for each pixel memorized in 1 and 2 above, the calculated result that indicates the number of the step corresponding to the image data read from the original is output to an accuracy of 10 bits.



(1)····A/D input
(2)····Shading output

Fig.5

[5] Brightness/Density Conversion

The signal resulting from shading correction corresponds to the light reflected off the original, hence it is generally called a brightness signal. The brightness/density conversion section converts the brightness signal into a density signal, as shown below.

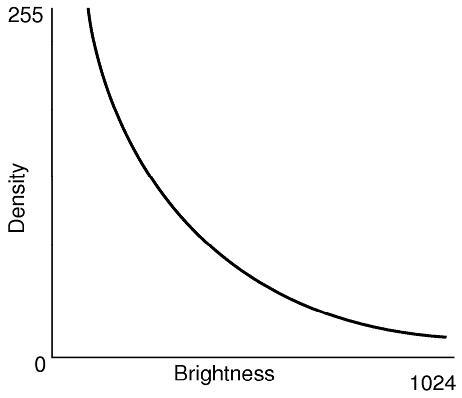


Fig.6

[6] EE Processing

A density that is suitable for the density of the original is automatically selected by EE processing, and a suitable copy made.

1. EE sampling range

(1) Platen mode: B5R width x Original length

[7] Text/Dot Pattern Identification

In order to copy an original under the optimum conditions, the text/dot pattern identification section judges whether the read part is text, dot pattern or a photograph, and uses the results in the subsequent filtering section.

[8] Filtering

Appropriate filtering takes place according to the kind of original and the selected magnification.

(1) Text filter .... Highlights the light and dark parts of the original.
(2) Dot pattern filter ..... Reduces moire.
(3) Photograph filter .... Improves the gray scale reproduction.

[9] Magnification Processing

In an analog machine, the horizontal magnification is changed by changing the scanning speed of the exposure unit, and vertical magnification by changing the position of the lens. In this machine, the horizontal magnification is changed by changing the scanning speed of the exposure unit, and the vertical magnification by means of electrical image processing. The read unit of the CCD (63.5 µm) and the write unit of the laser (63.5 µm) are equal to each other, and remain unchanged when the copy image is enlarged or reduced in the vertical direction. As a result, write data that corresponds exactly to the write position when the image is enlarged or reduced in the vertical direction sometimes fails to exist.

1. Vertical magnification change processing during enlargement

As shown in the example of Fig.10, if the pixel data obtained when the original is read by the CCD is D_1 to D_5, the positions of the read data when the image is enlarged are E_1 to E_5.. However, the following problems will occur if the write data consists of this read data alone.

(a) There will be a gap between one data and the next, resulting in gaps in the image.

(b) The data position and write position will not coincide exactly.

Consequently, if read data that corresponds exactly to the write position fails to exist, as indicated by the dotted lines of Fig.10, the write density is determined as shown below.

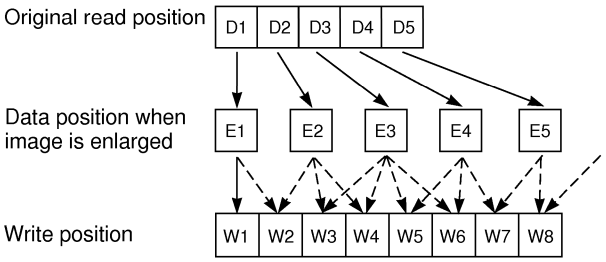


Fig.10

2. Vertical magnification change processing during reduction

As shown in the example of Fig.11, if the pixel data obtained when the original is read by the CCD is D_1 to D_5, the positions of the read data when the image is reduced overlap each other as indicated by $R_1$to R_5, hence the write positions fail to coincide with the read positions.Therefore, the write density is determined as shown below.

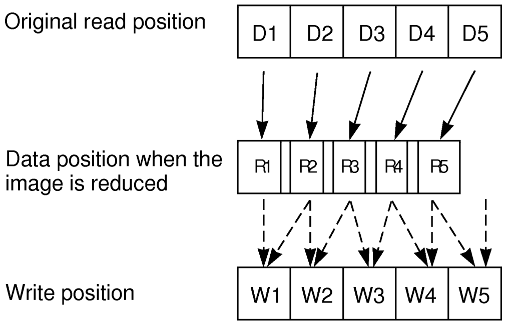


Fig.11

3. Density correction

Figure 11 is a graph the vertical axis of which represents density (256 steps) and the horizontal axis of which represents position: Here, the distance between E_2 and E_1 of Fig.10 is set out on the horizontal axis and divided into 16 steps. If the position with respect to write data W_2 is " ℓ ", the density S can be obtained using the following equation.

$$S = E_1 + \left(\frac{E_2 - E_1}{16} \right) \times \ell$$

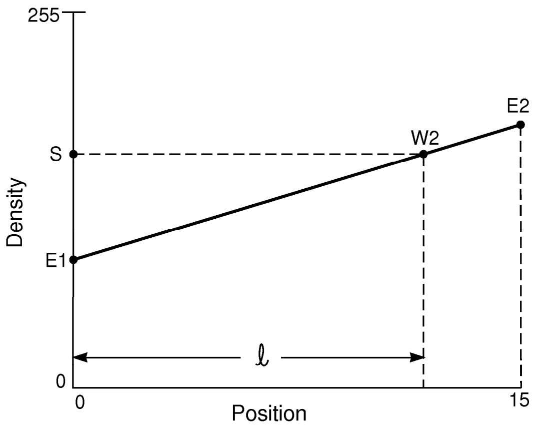


Fig.12

[10] Reversal Processing

This function reverses the input brightness data in order to reverse black and white when the reverse copy mode is selected.

[11] Copy γ Correction

The copy γ correction function selects the density curve corresponding to the density selected by the density button on the operation panel. The selected density curve is applied to the data that was subjected to filter/magnification change processing.

Suitable density curves are provided for the text, photo and text & photo modes.

[12] Selector, SGU

Selector is a function that switches between the image signal from the electronic RDH, and the read time image processed signal.

SGU is a function that generates various test patterns.

[13] Write Density Control

The write density control function converts image data to the optimum laser exposure based on the characteristics related to the drum like drum potential, toner density, etc.

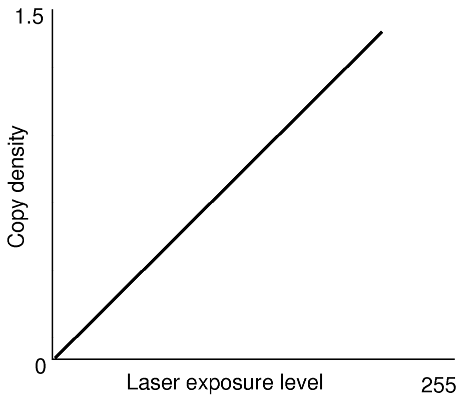


Fig.13

[14] Error Diffusion Processing

Error diffusion processing is intended to make efficient use of the installed memory and also to obtain a satisfactory copy image.

[15] Image Compression Processing

This processing function stores compressed image data in the memory to enable a large quantity of image data to be stored when electronic RDH is used.

[16] Memory

The memory can hold about seventy A4 size originals consisting of average word processor text. The number of pages will be less than this, if the originals include many photographs and dot pattern images. Expansion memory units MU-101 and MU-102 are available as options.

[17] Two-beam control

This function is used to adjust the timing of the laser data from the two beams and also to detect and correct any deviation between the two beams.

IMAGE WRITE

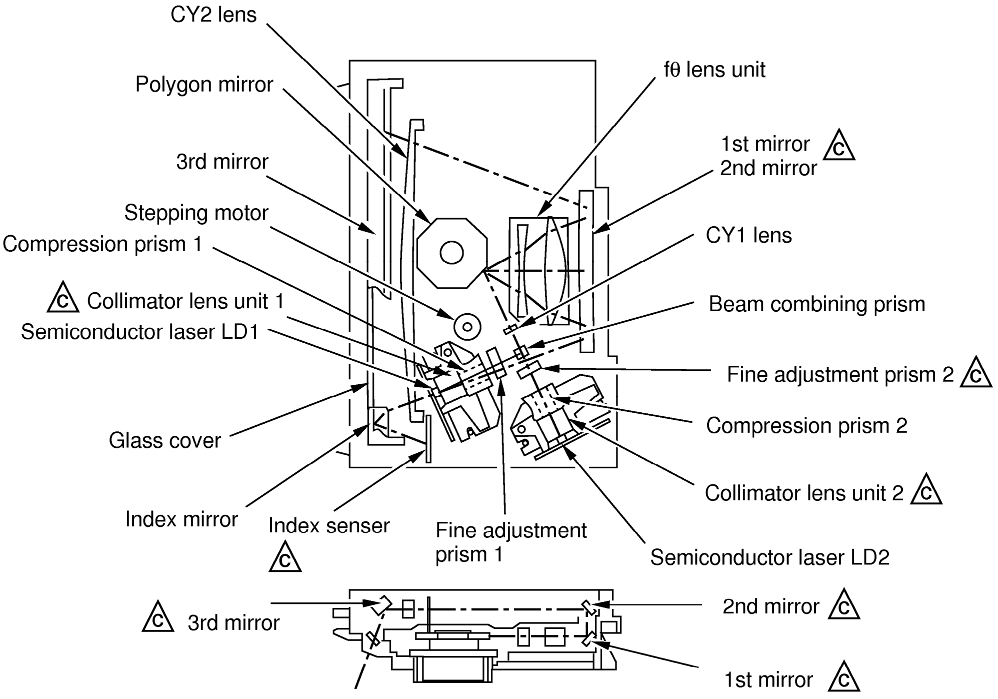

CY2 lens
Polygon mirror
3rd mirror
Stepping motor
Compression prism 1
Collimator lens unit 1
Semiconductor laser LD1
Glass cover
Index mirror
Index senser
Fine adjustment prism 1
fθ lens unit
1st mirror
2nd mirror
CY1 lens
Beam combining prism
Fine adjustment prism 2
Compression prism 2
Collimator lens unit 2
Semiconductor laser LD2
3rd mirror
2nd mirror
1st mirror

Fig.14

[1] Outline

Figure 14 shows the layout of the various parts of the write unit. The processed image data is output by semiconductor lasers. The light output from these lasers is sent via the path shown in Fig.15 to the OPC drum.

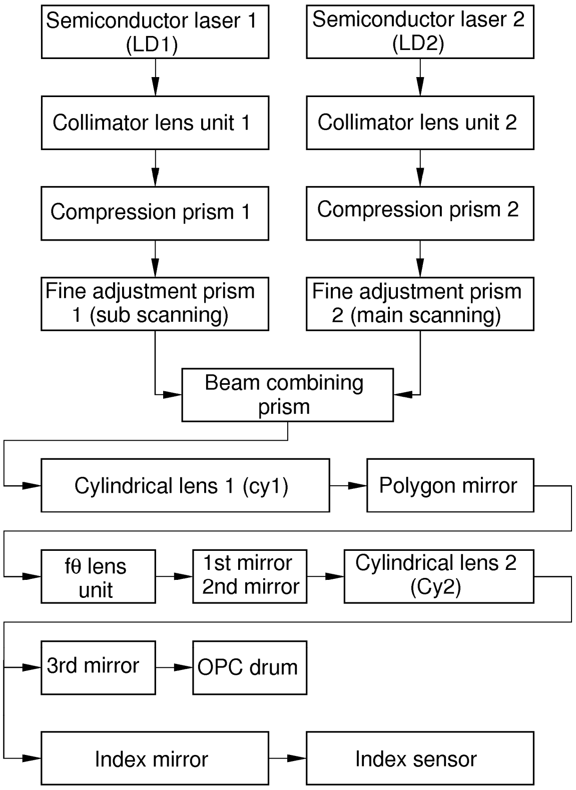

Semiconductor laser 1 (LD1)
Semiconductor laser 2 (LD2)
Collimator lens unit 1
Collimator lens unit 2
Compression prism 1
Compression prism 2
Fine adjustment prism 1 (sub scanning)
Fine adjustment prism 2 (main scanning)
Beam combining prism
Cylindrical lens 1 (cy1)
Polygon mirror
fθ lens unit
1st mirror 2nd mirror
Cylindrical lens 2 (Cy2)
3rd mirror
OPC drum
Index mirror
Index sensor

Fig.15

[2] Collimator lens

Figure 16 shows the function of the collimator lens. This lens is used to form the light which diverges from a point source into a parallel beam.

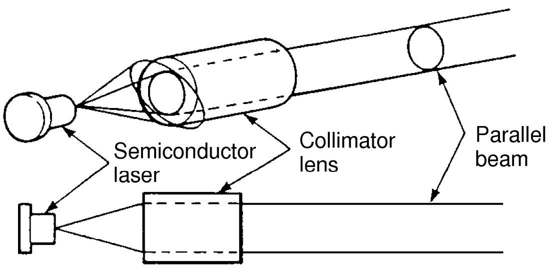

Semiconductor laser
Collimator lens
Parallel beam

Fig.16

[3] Beam combining prism

This prism causes the beams from the two semiconductor lasers mounted at right angles to each other to be output in the same direction.

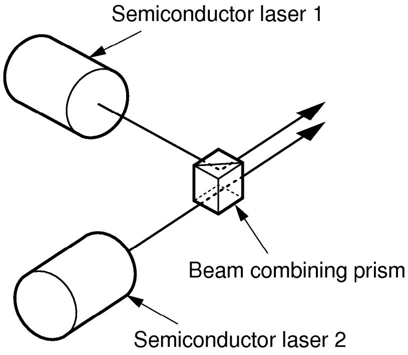

Semiconductor laser 1
Beam combining prism
Semiconductor laser 2

Fig.17

[4] Compression Prism

This prism shapes the beam radiated from each semiconductor laser, and adjusts the height in the up-down direction.

[5] Fine Adjustment Prism

This prism performs fine adjustment of the beam radiated from each semiconductor laser in the left-right and up-down directions.

[6] Polygon mirror

This is a multi-sided mirror which converts the laser beam into a scanning beam. An octagonal mirror is used in this machine. Figure 18 shows the appearance of the polygon mirror.

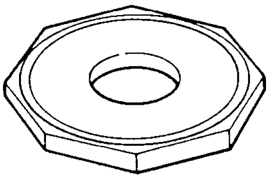


Fig.18

[7] fθ lens

The polygon mirror rotates at a constant angular speed. Consequently, if a general image forming lens were to be used, the speed at which the laser beam scans the surface of the drum would vary at the center and the both edge of the drum, as shown in Fig.19.

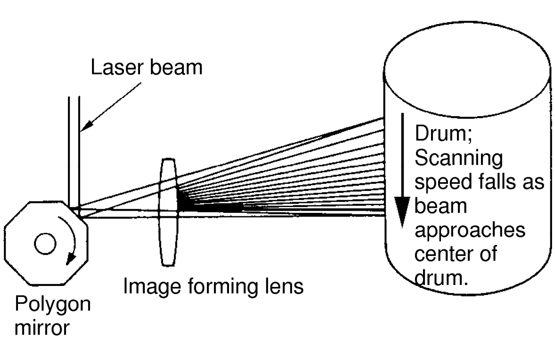

Laser beam
Drum; Scanning speed falls as beam approaches center of drum.
Image forming lens
Polygon mirror

Fig.19

An fθ lens is used to maintain the scanning speed constant over the entire length of the drum.

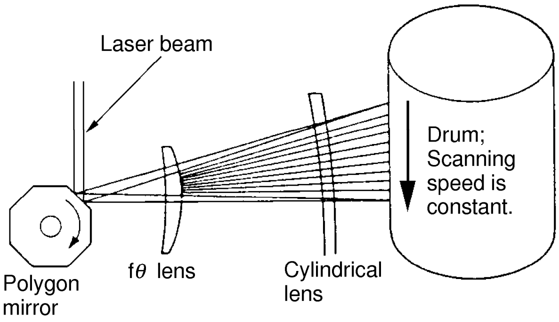

Laser beam
Drum; Scanning speed is constant.
fθ lens
Cylindrical lens
Polygon mirror

Fig.20

[8] Cylindrical Lenses

Two lenses, cylindrical lens 1 (Cy1) and cylindrical lens 2 (Cy1), are used to eliminate the tilt error of the polygon mirror. Cylindrical lenses 1 and 2 are installed before and after the polygon mirror, as shown in Fig.21. The laser beam is focused on the polygon mirror by means of cylindrical lens 1, and the light reflected off the polygon mirror is once again focused on the drum by means of cylindrical lens 2.

The optical relationship between the polygon mirror and the drum face with respect to cylindrical lens 2 is that of image and object. Consequently, even if the polygon mirror is tilted, the light path is corrected by cylindrical lens 2, ensuring that the beam is scanned along the same line.

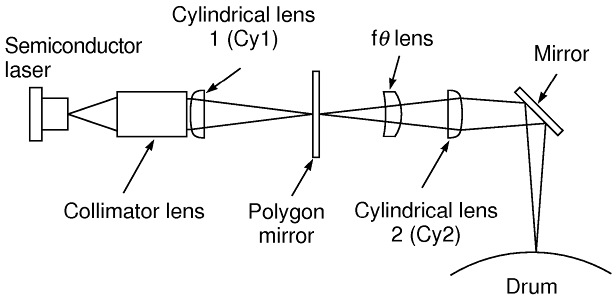

Semiconductor laser
Cylindrical lens 1 (Cy1)
fθ lens
Mirror
Collimator lens
Polygon mirror
Cylindrical lens 2 (Cy2)
Drum

Fig.21

[9] Index Sensor

This sensor is intended to determine the leading edge write position for each scan in the axial direction of the drum, and also to determine the positions of the two beams.

IMAGE FORMATION

[1] Charging

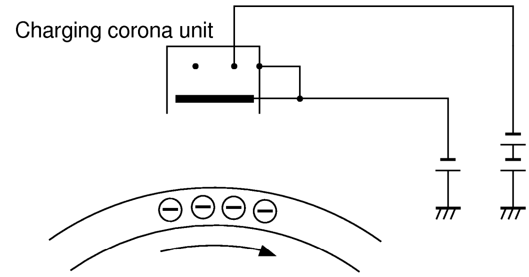


Fig.22

A negative charging method using a Scorotron is employed. A constant negative voltage is applied to the charging plate and back plate in order to maintain the potential of the drum constant.

[2] Exposure

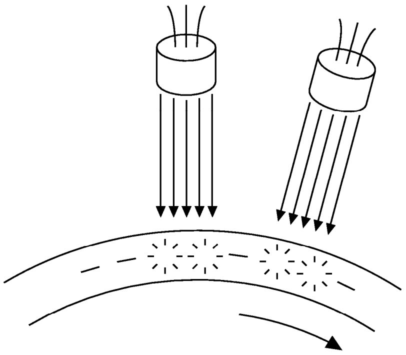


Fig.23

Exposure is performed by means of the laser beams, causing the charge on the drum to be erased. Two laser beams are used to write (exposure) two lines of image data at a time.

[3] Developing

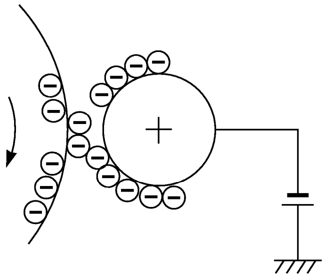


Fig.24

Negatively charged toner adheres to the parts of the surface of the drum where charge was erased during the exposure process.

[4] Transfer

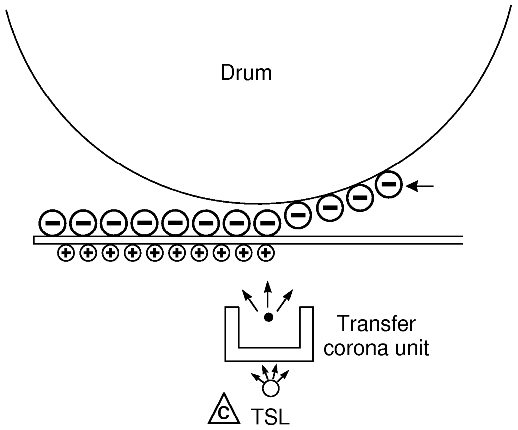


Fig.25

The transfer corona unit causes the toner on the drum to be transferred to the paper by means of a discharge from the back of the paper.
The TSL improves the transfer of the toner and the separation of the paper.

[5] Separation

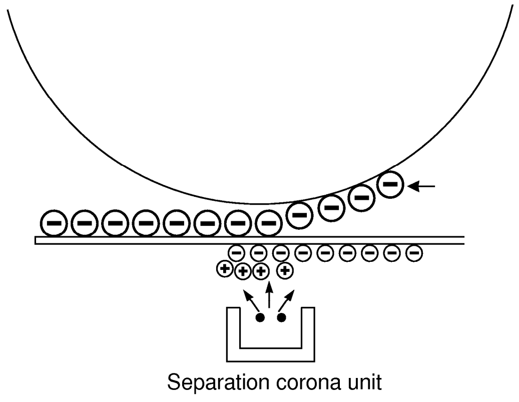

Separation corona unit

Fig.26

The separation corona unit erases the charge on the paper by applying an AC discharge from the back of the paper, thus enabling the paper to separate from the drum under its own weight.

[6] Cleaning

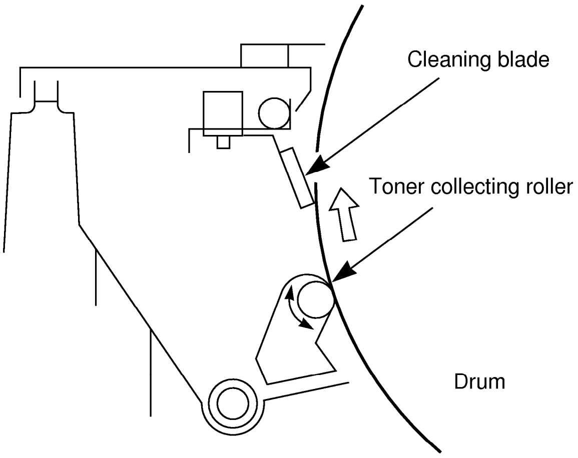

Cleaning blade
Toner collecting roller
Drum

Fig.27

Toner remaining on the drum is removed by the cleaning blade.

[7] PCL

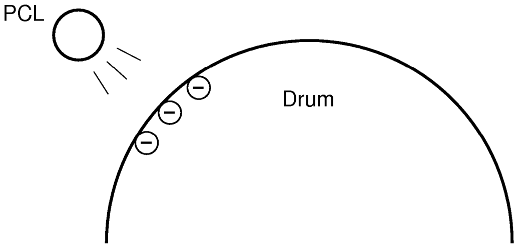


Fig.28

The PCL erases the potential remaining on the surface of the drum.

3

MAIN BODY (A ~ I)

3. MAIN BODY

OUTLINE OF THE SYSTEM 3-A-1
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[7] M8 (transfer/separation wire cleaning) Control 3-H-8
Developing Unit 3-I-1
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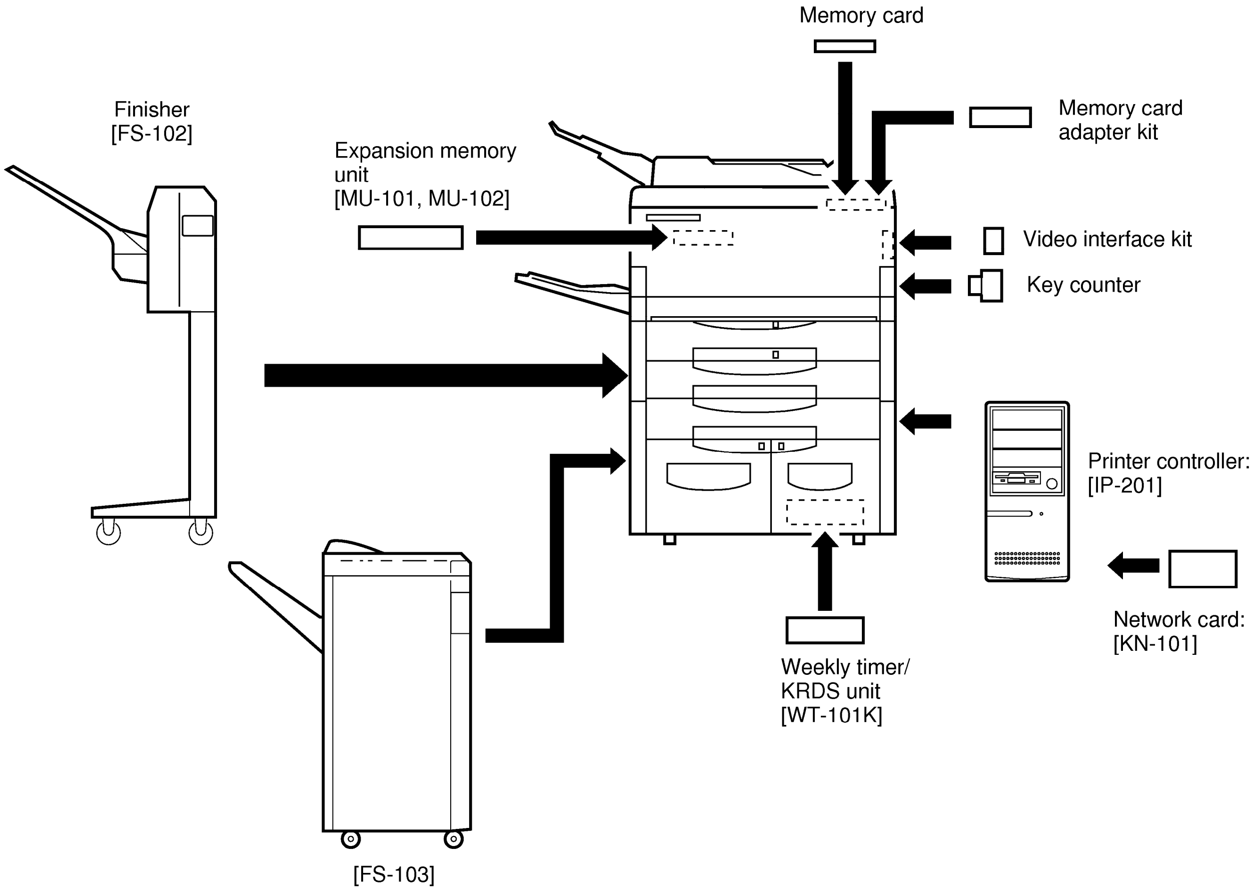
[2] Mechanism 3-I-1
[3] Disassembly/Assembly 3-I-2
[4] M3 (developing drive) Control 3-I-4
[5] M35 (agitator screw) control 3-I-5
[6] Developing Bias Control 3-I-5
[7] Toner Density Control 3-I-6
[8] Dmax Control 3-I-7
[9] Gradation Correction Control 3-I-8
[10] FM30 (developing suction) Control 3-I-9

This section covers the structure, functions, operation and method of disassembling and assembling the machine.
Observe the following precautions when performing disassembly and assembly work.

1. Be sure to unplug the power cord before working on the machine.
2. Perform all reassembly work by reversing the order in which the componet was disassembled, unless otherwise specified.
3. Do not lose small parts (screws, etc.) or insert them in the wrong place.
4. Install all parts completely before operating the machine.
5. Do not loosen the screws indicated as disallowed for removal.

OUTLINE OF THE SYSTEM


Memory card
Memory card adapter kit
Finisher [FS-102]
Expansion memory unit [MU-101, MU-102]
Video interface kit
Key counter
Printer controller: [IP-201]
Network card: [KN-101]
Weekly timer/ KRDS unit [WT-101K]
[FS-103]

7050 PRODUCT SPECIFICATIONS

1. Type

Type:	Console type (floor-mounted type)
Copying method:	Indirect electrostatic method
Original table method:	Fixed
Photosensitive material:	OPC
Sensitizing method:	Laser writing method
Paper feed method:	Two stacked trays (500 sheets x 2, 80 g/m^2) Multi by-pass tray (150 sheets, 80 g/m^2) LCT (1000 sheets/1500 sheets, 80 g/m^2)

2. Functions

Originals:	Sheets, books, solid objects
Original size:	Max A3
Copy size:	A3 to A5R
Magnification	
Fixed magnifications:	x1.00, x1.41, x1.22, x1.15, x0.82, x0.86, x0.71
Special ratio magnifications:	2 modes
Zoom magnification:	x0.50 to 4.00 (1% steps)
Vertical magnification:	x0.50 to 4.00 (1% steps)
Horizontal magnification:	x0.50 to 4.00 (1% steps)
Warm-up time:	Approx. 5.5 minutes (20°C, rated voltage)

First copy time (seconds)

Size	A4
Manual	4.9
AE	4.9
APS	4.9

Continuous copy speed (life size, copies/minute)

Size	A4
A4	51

Number of continuous copies:	1 to 999
Copy density selection:	AE, manual Arbitrarily set density (2 modes)
Special functions:	OHP interleave, Thin paper/thick paper mode, 2 IN 1/4 IN 1 mode, Sheet/copy insertion mode, Chapter classification, Book copy, Repeat image, Text/photo mode, Reversed black and white mode, Non-image area erasure, Fold erasure/frame erasure, Shift/reduction shift, Weekly timer, Job memory, Mixed original mode, Image insert, Image reading, Single step mode, Book memory

3. Copy Paper

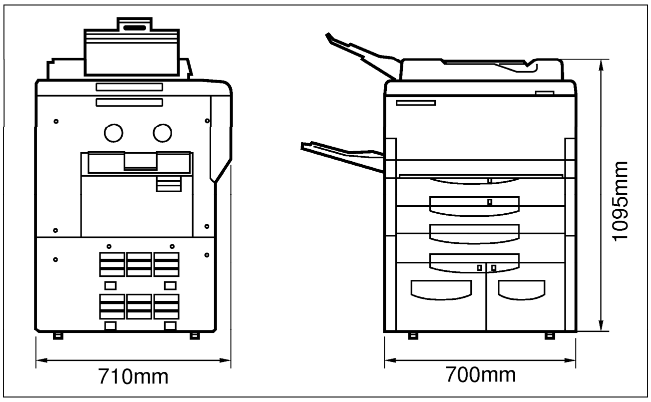
Plain paper	High quality paper (60 g/m^2 to 90 g/m^2)
Special paper	* Label paper * OHP film (by-pass feed only) * Blueprint master * Offset masters * Recycled paper * Reproducibles * High quality paper (50 g/m^2 to 59 g/m^2, 91 g/m^2 to 130 g/m^2)

4. Options

Key counter	
Finisher:	FS-102/FS-103
Weekly timer/KRDS:	WT-101K
Expansion memory unit:	MU-101/MU-102
Memory card	
Memory card adapter kit	
Printer controller:	IP-201
Network card:	KN-101
Video interface kit	

5. Particulars of Machine

Power source:	230 VAC –14% to +10.6%, 50/60 Hz 120 VAC ±10%, 60Hz
Power consumption:	Max. 2100 W
Weight:	Approx. 200 kg
Machine dimensions	



<For European Countries Only>

6. Maintenance

Maintenance interval:	Every 120,000 copies
Machine service life:	5,000,000 copies or 5 years

7. Copy Materials

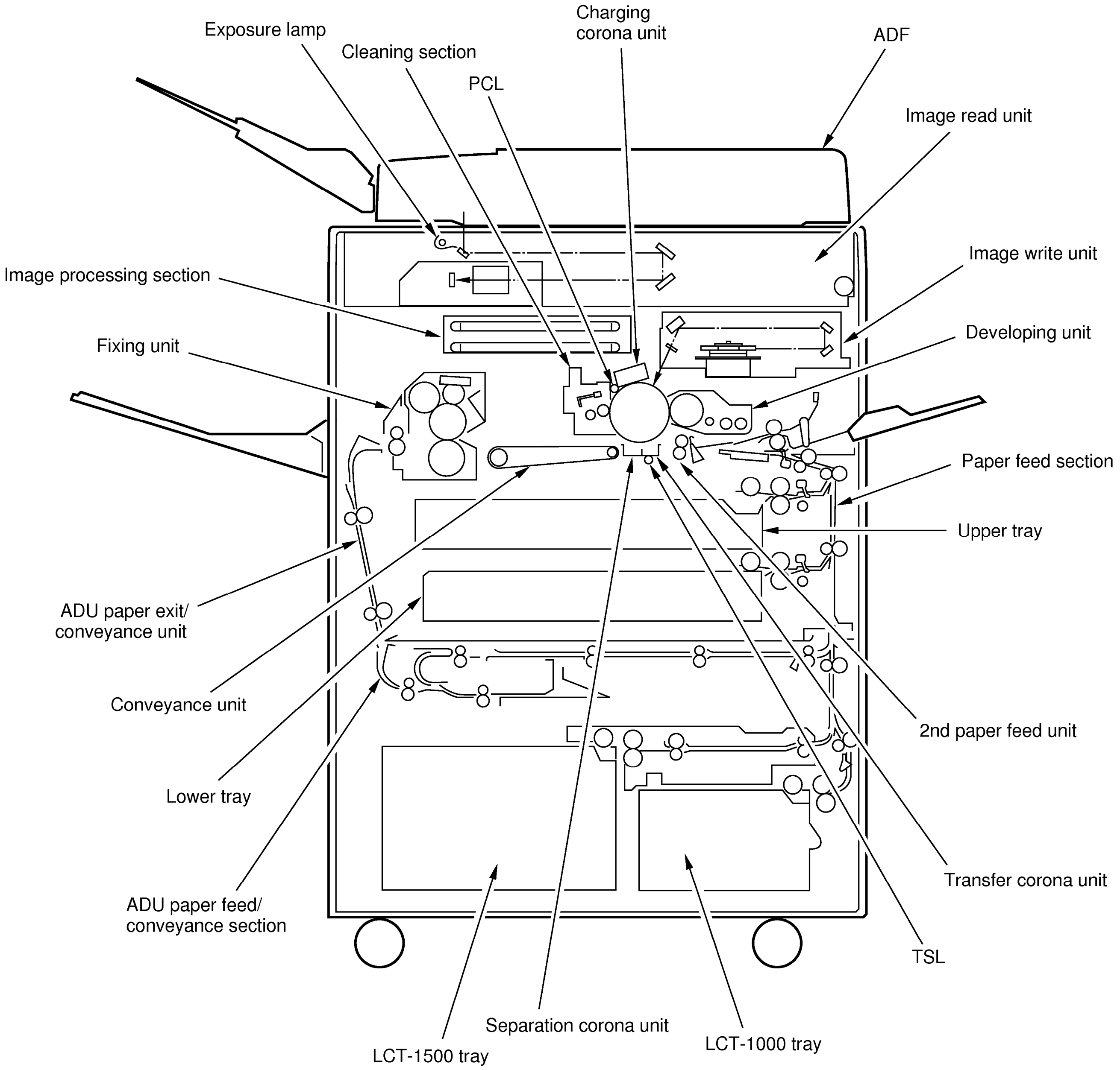
Developer:	Exclusively for 7050
Toner:	Exclusively for 7050
Drum:	OPC drum (ϕ 80) Exclusively for 7050

8. Machine Operating Environment

Temperature:	10 to 30°C
Humidity:	10 to 80%RH

These specifications are subject to change without notice.

CENTER CROSS-SECTION


Exposure lamp
Cleaning section
PCL
Charging corona unit
ADF
Image read unit
Image processing section
Image write unit
Developing unit
Fixing unit
Paper feed section
Upper tray
ADU paper exit/ conveyance unit
Conveyance unit
Lower tray
ADU paper feed/ conveyance section
2nd paper feed unit
Transfer corona unit
TSL
Separation corona unit
LCT-1500 tray
LCT-1000 tray

<For Other's Countries Only>

6. Maintenance

Maintenance interval:	Every 100,000 copies
Machine service life:	5,000,000 copies or 5 years

7. Copy Materials

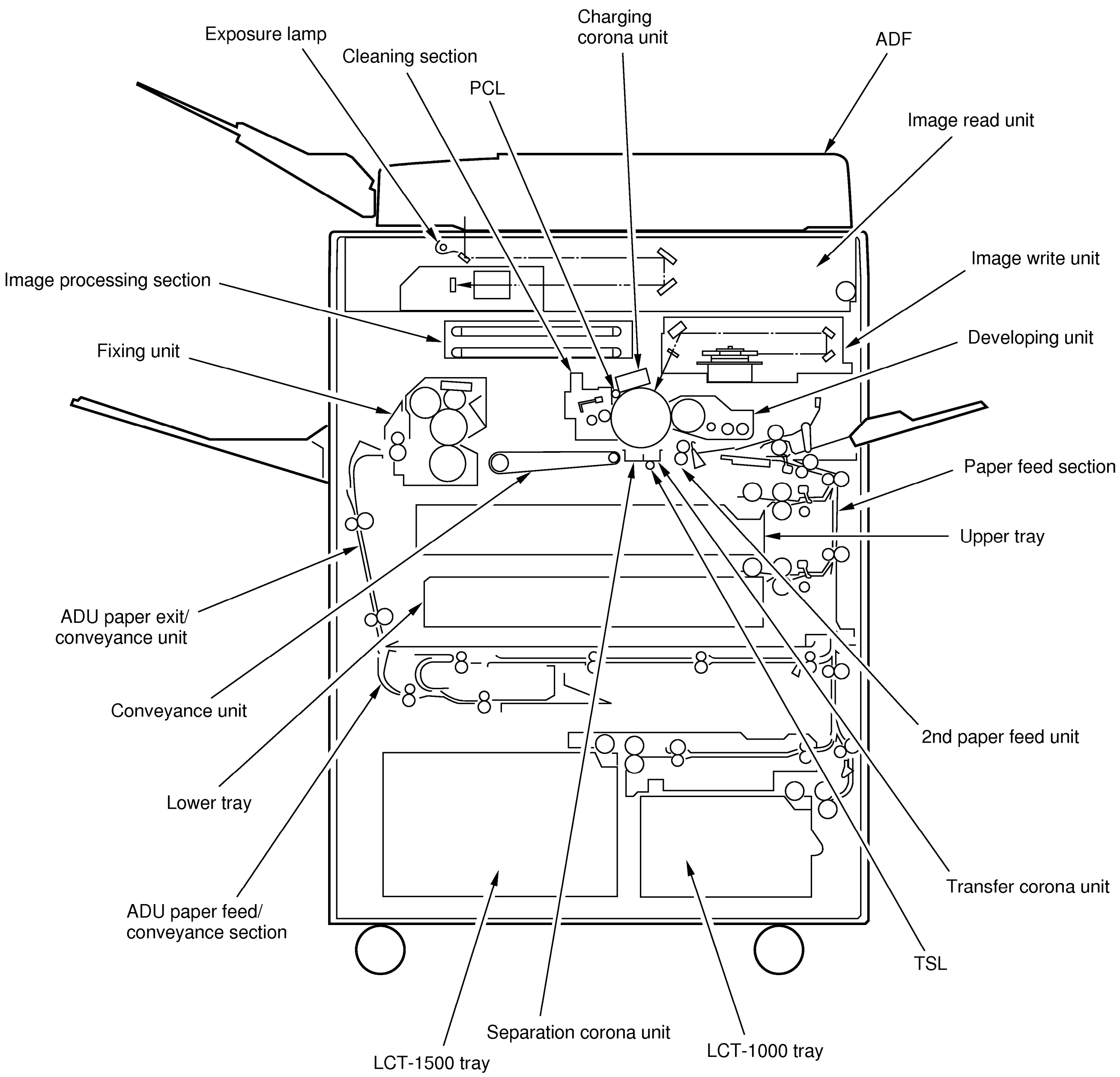
Developer:	Exclusively for 7050
Toner:	Exclusively for 7050
Drum:	OPC drum (ϕ 80) Exclusively for 7050

8. Machine Operating Environment

Temperature:	10 to 30°C
Humidity:	10 to 80%RH

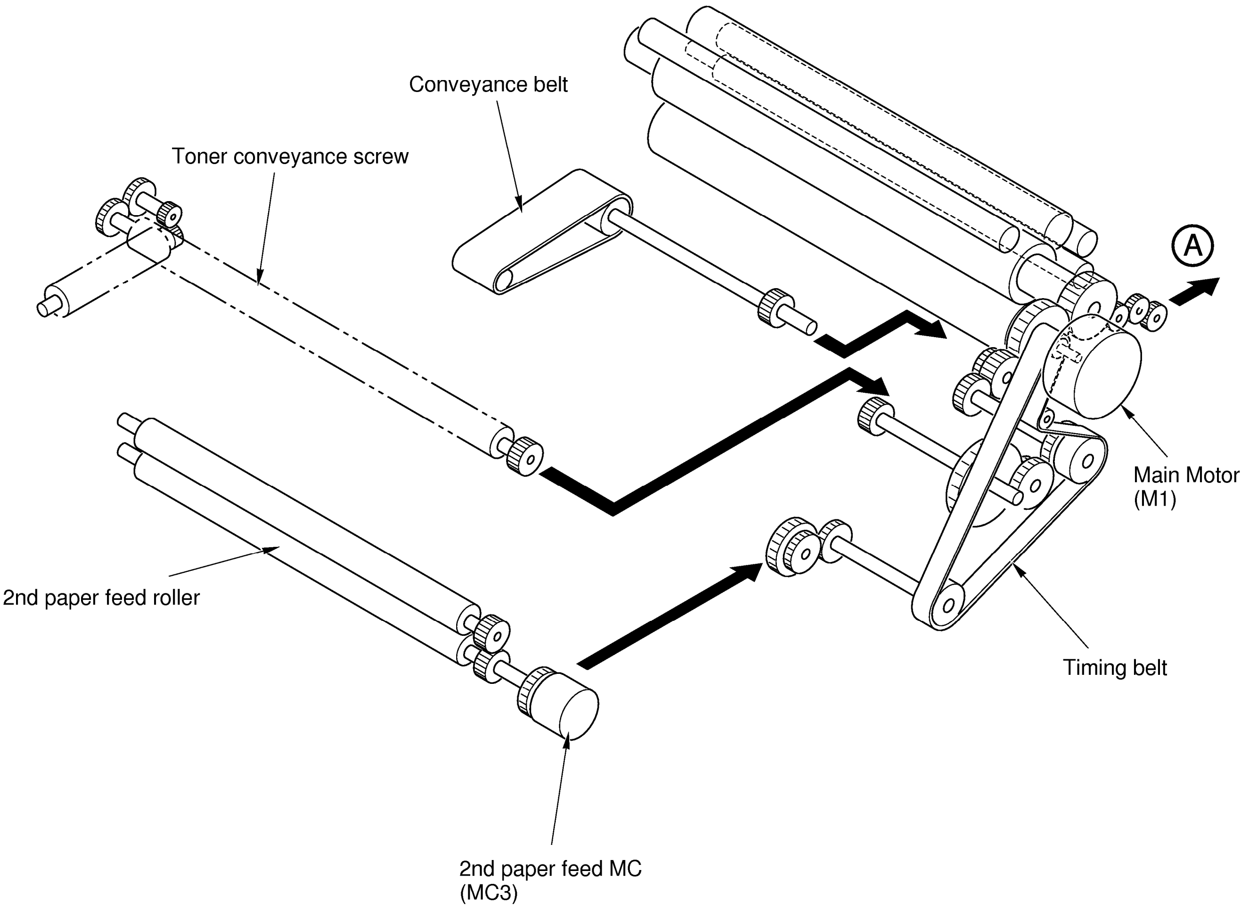
These specifications are subject to change without notice.

CENTER CROSS-SECTION

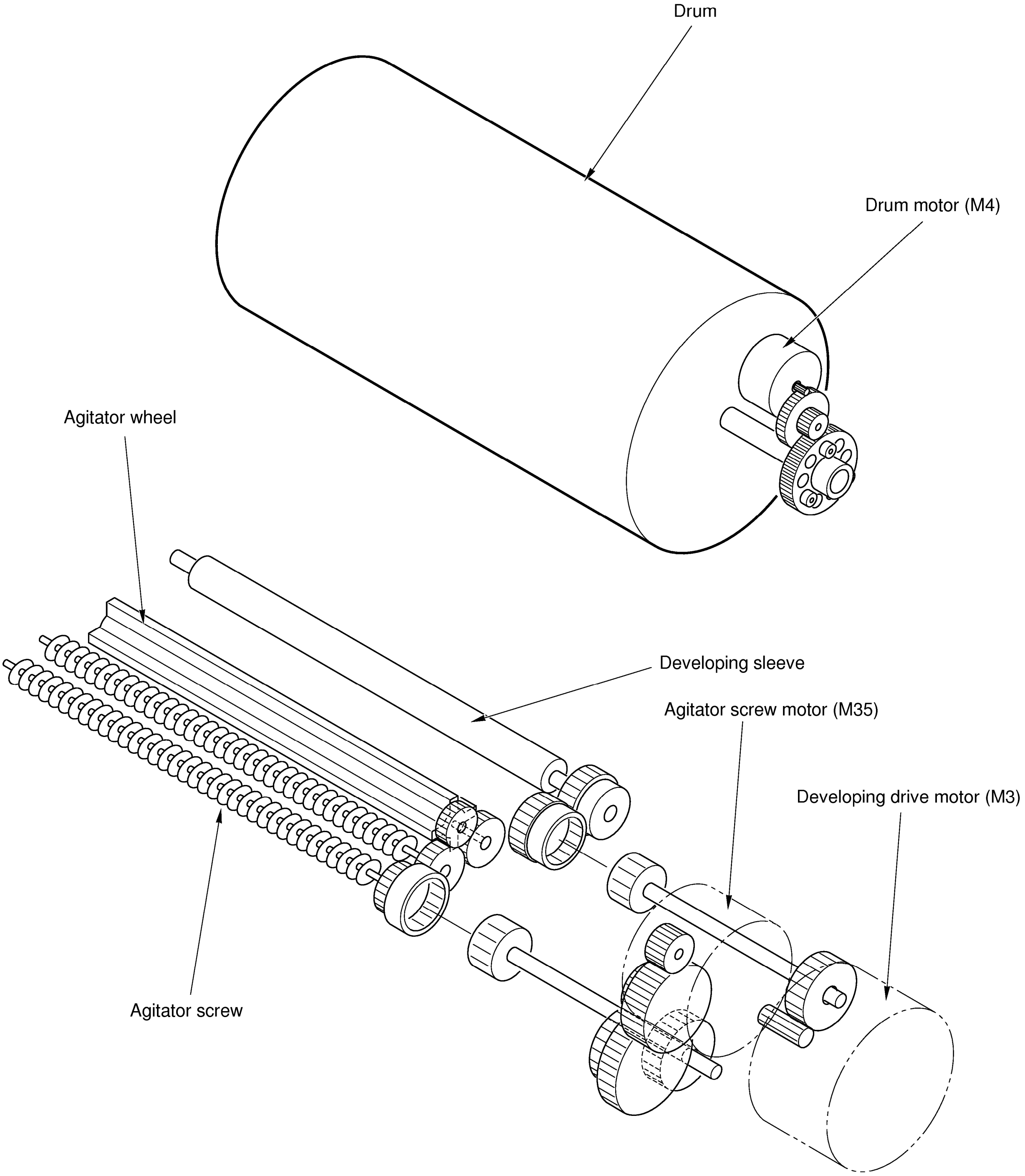

Exposure lamp
Cleaning section
Charging corona unit
PCL
ADF
Image read unit
Image write unit
Image processing section
Developing unit
Fixing unit
Paper feed section
Upper tray
ADU paper exit/ conveyance unit
2nd paper feed unit
Conveyance unit
Lower tray
Transfer corona unit
ADU paper feed/ conveyance section
TSL
Separation corona unit
LCT-1000 tray
LCT-1500 tray

DRIVE SYSTEM DIAGRAM

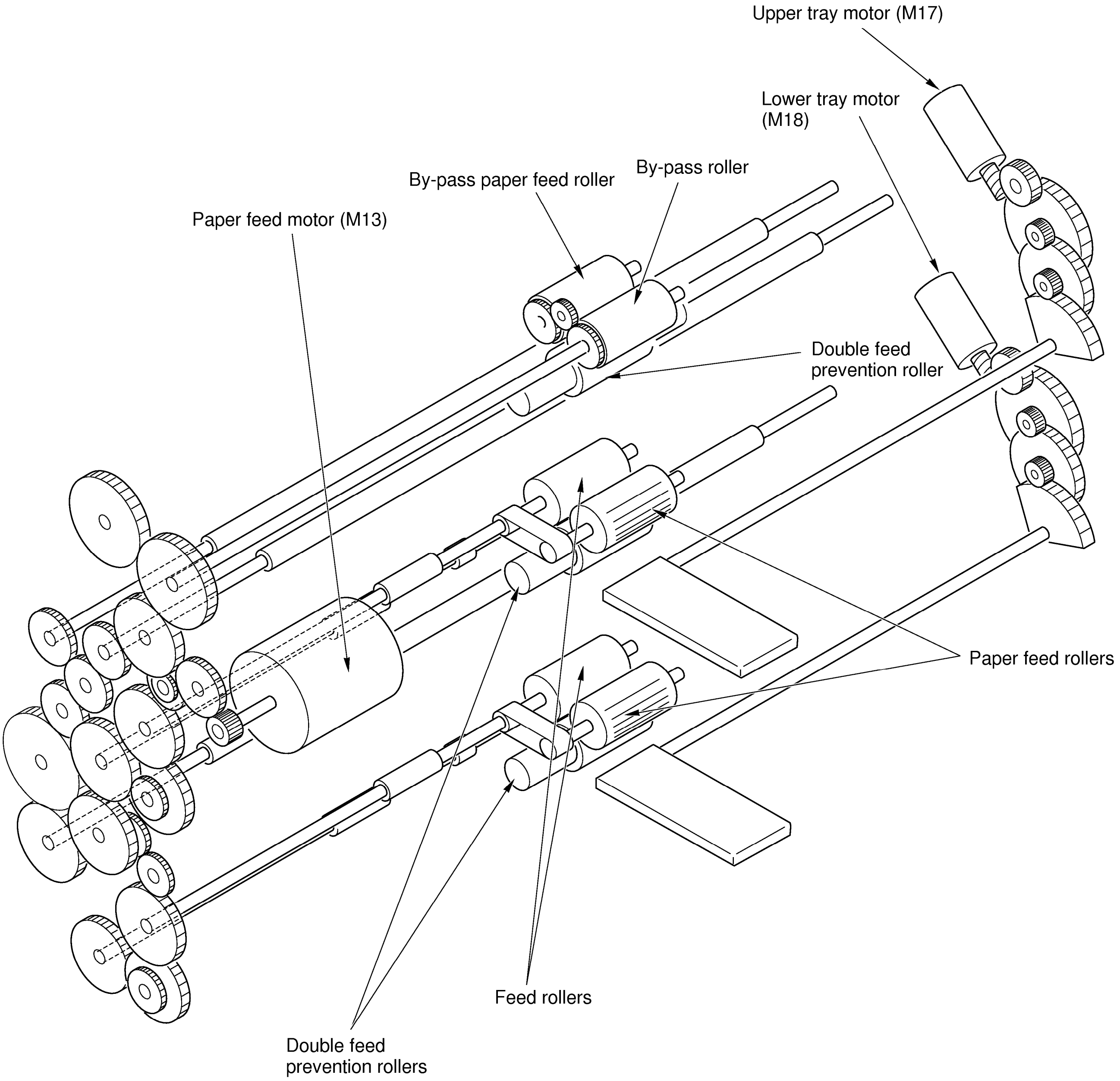
[1] Main Drive


Conveyance belt
Toner conveyance screw
Ⓐ
Main Motor
(M1)
2nd paper feed roller
Timing belt
2nd paper feed MC
(MC3)

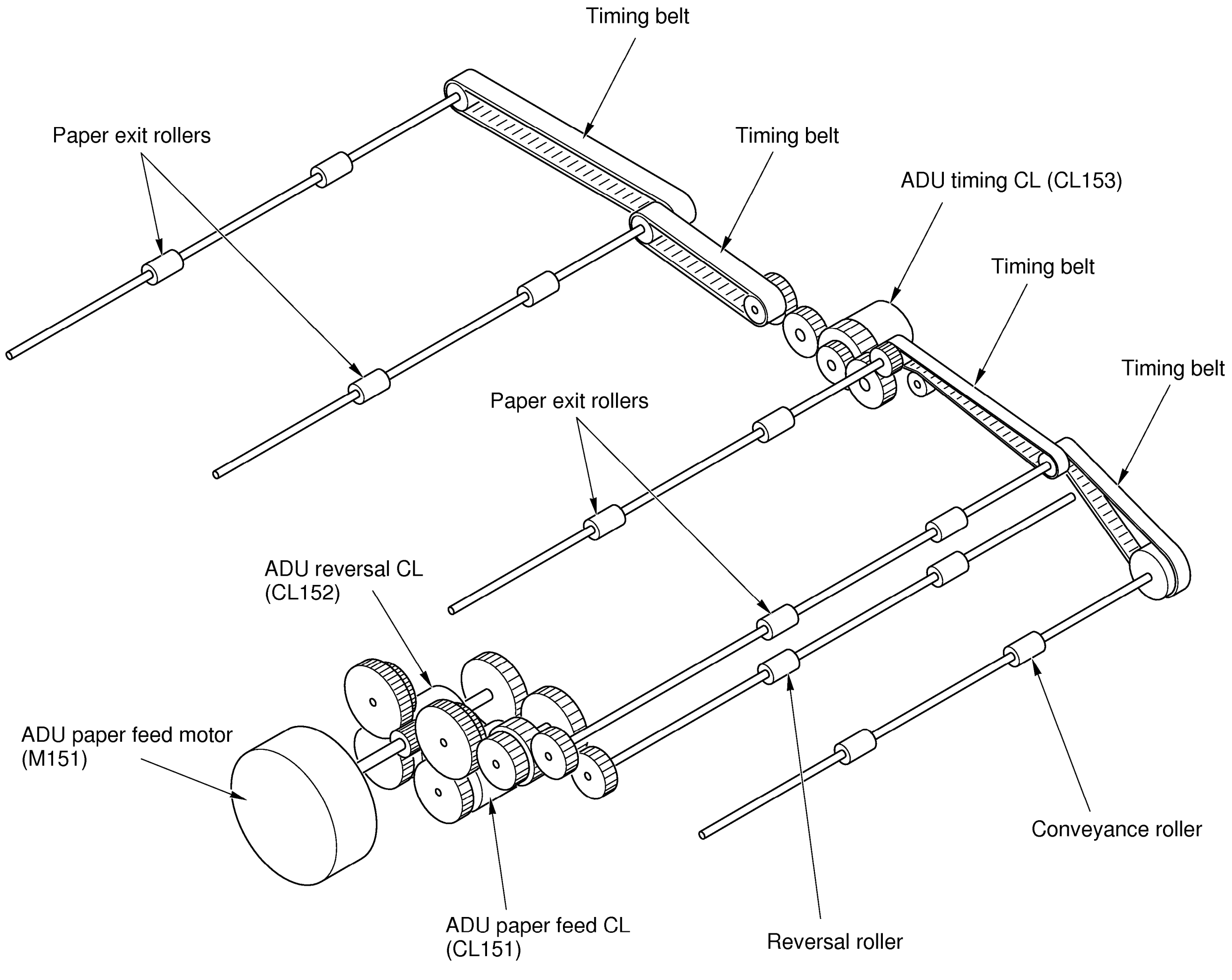
[2] Drum/Developing Drive


Drum
Drum motor (M4)
Agitator wheel
Developing sleeve
Agitator screw motor (M35)
Developing drive motor (M3)
Agitator screw

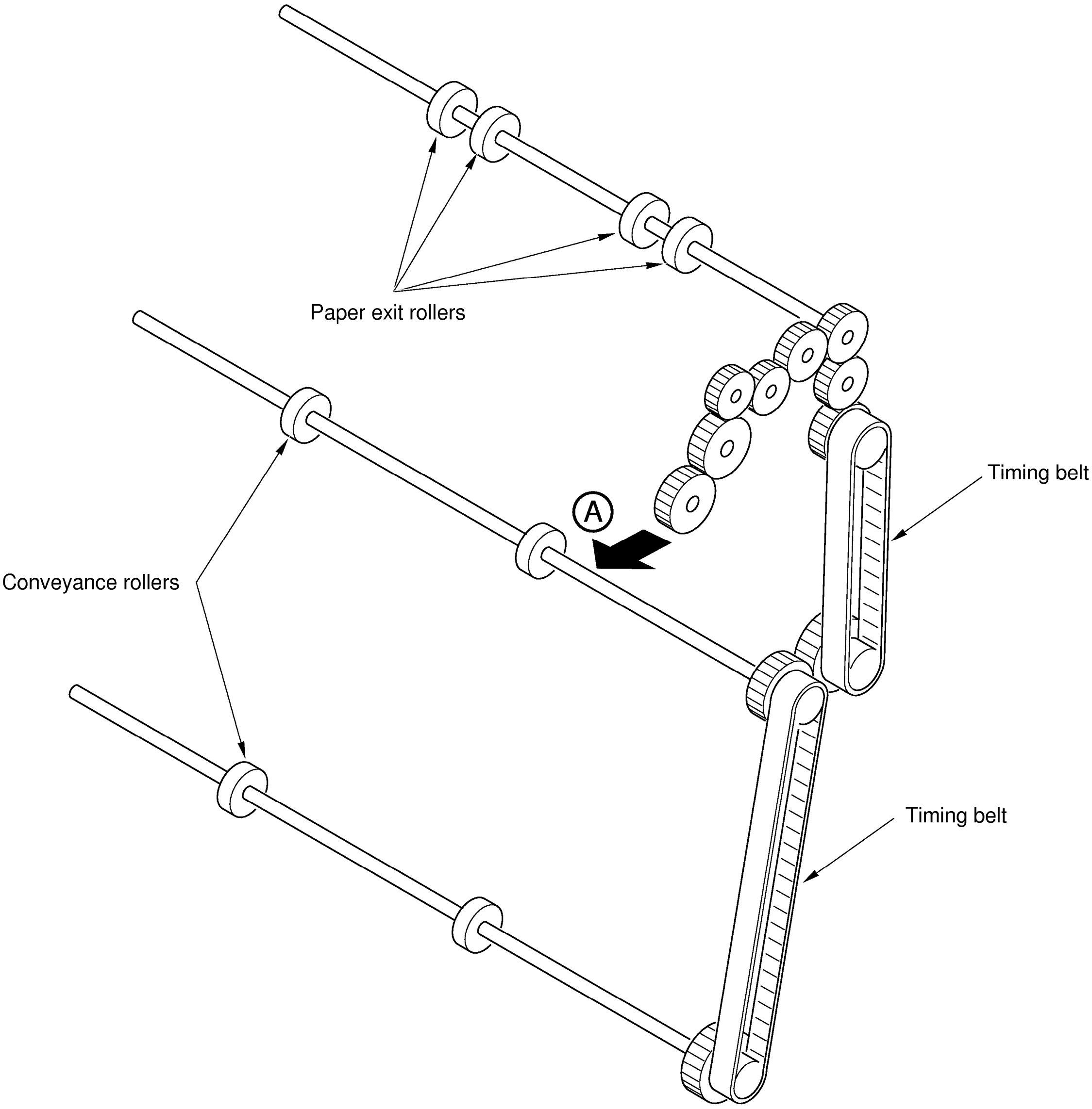
[3] Paper Feed Drive


Upper tray motor (M17)
Lower tray motor (M18)
By-pass paper feed roller
By-pass roller
Paper feed motor (M13)
Double feed prevention roller
Paper feed rollers
Feed rollers
Double feed prevention rollers

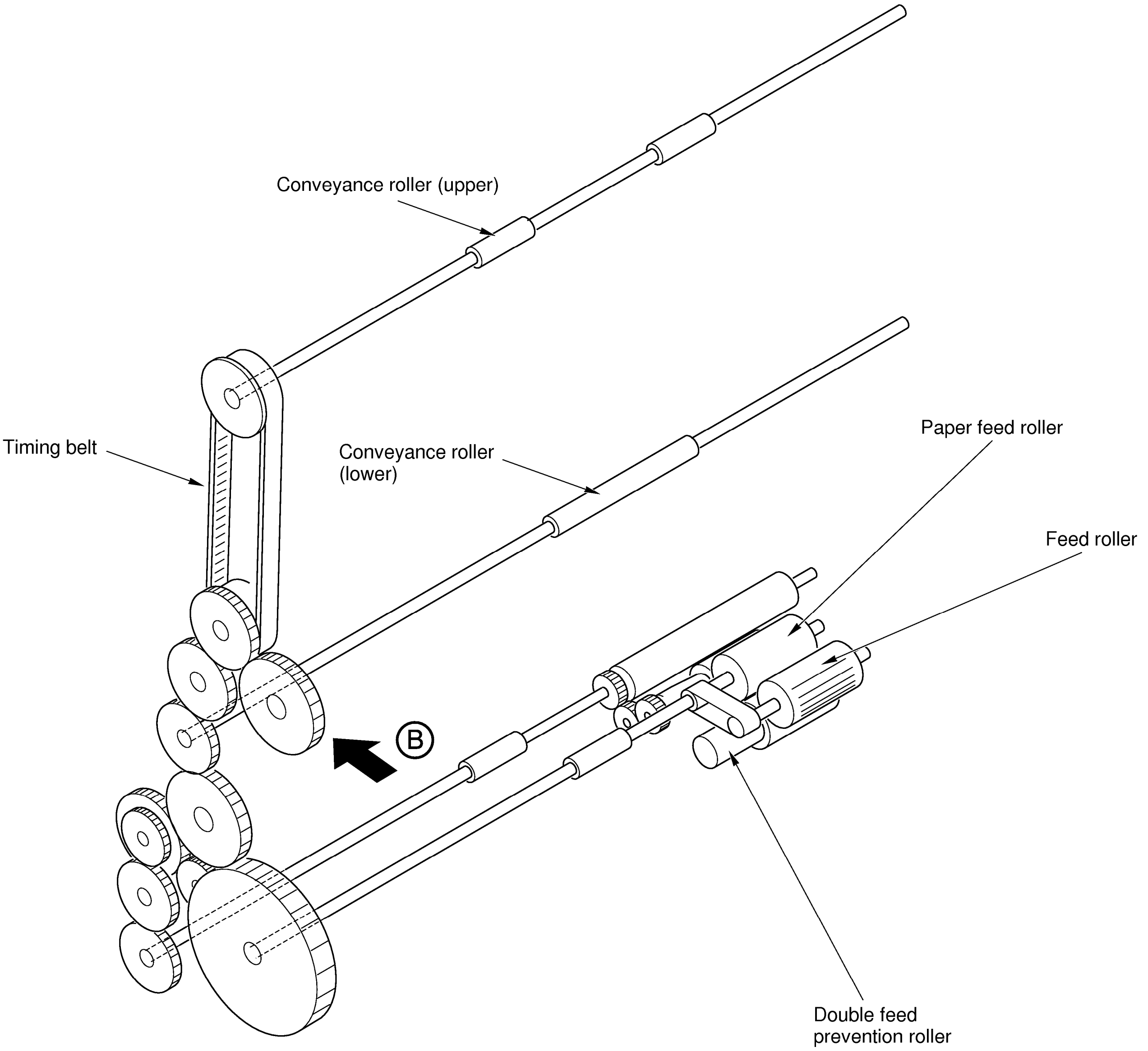
[4] ADU Paper Exit/Conveyance Drive


Timing belt
Paper exit rollers
Timing belt
ADU timing CL (CL153)
Timing belt
Timing belt
Paper exit rollers
ADU reversal CL
(CL152)
ADU paper feed motor
(M151)
Conveyance roller
ADU paper feed CL
(CL151)
Reversal roller

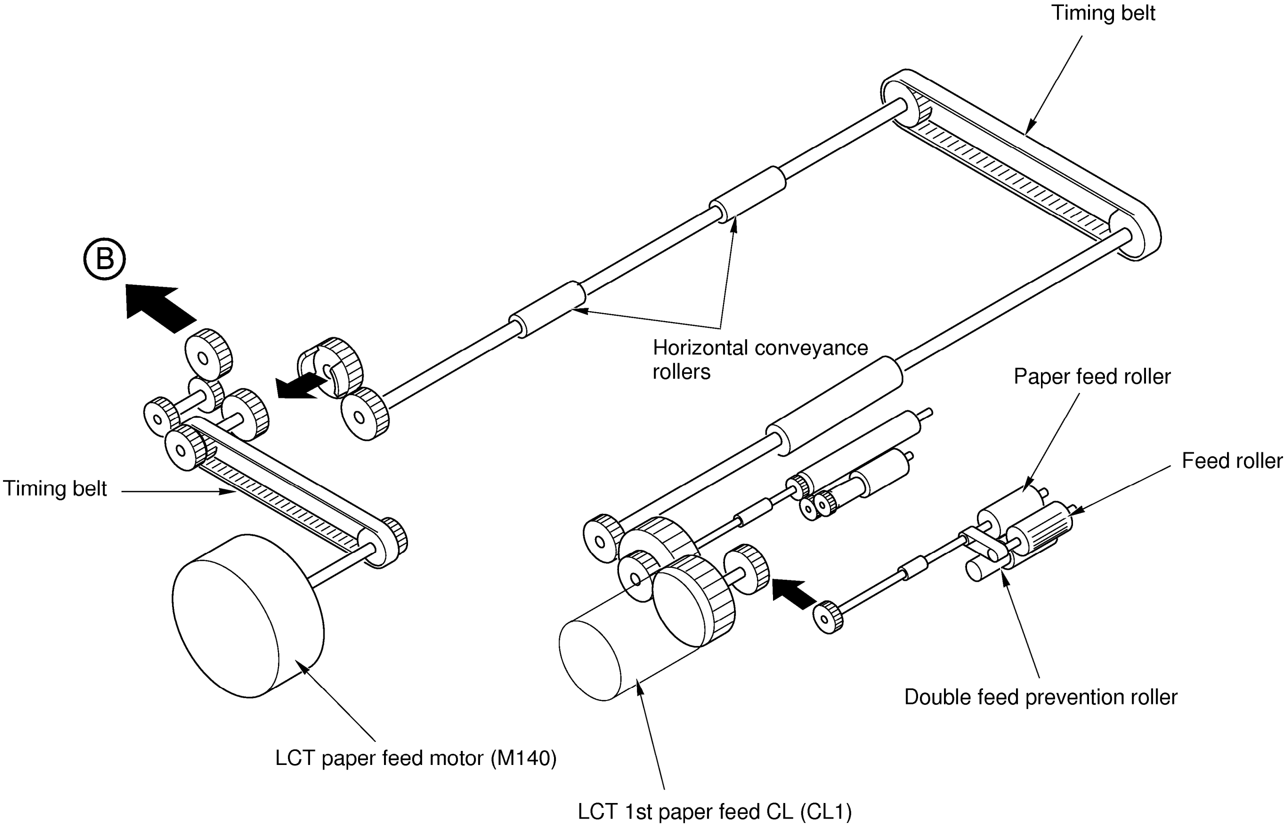
[5] ADU Paper Exit/Conveyance Drive


Paper exit rollers
Timing belt
A
Conveyance rollers
Timing belt

## [6] 1000-Tray Paper Feed/Conveyance Drive

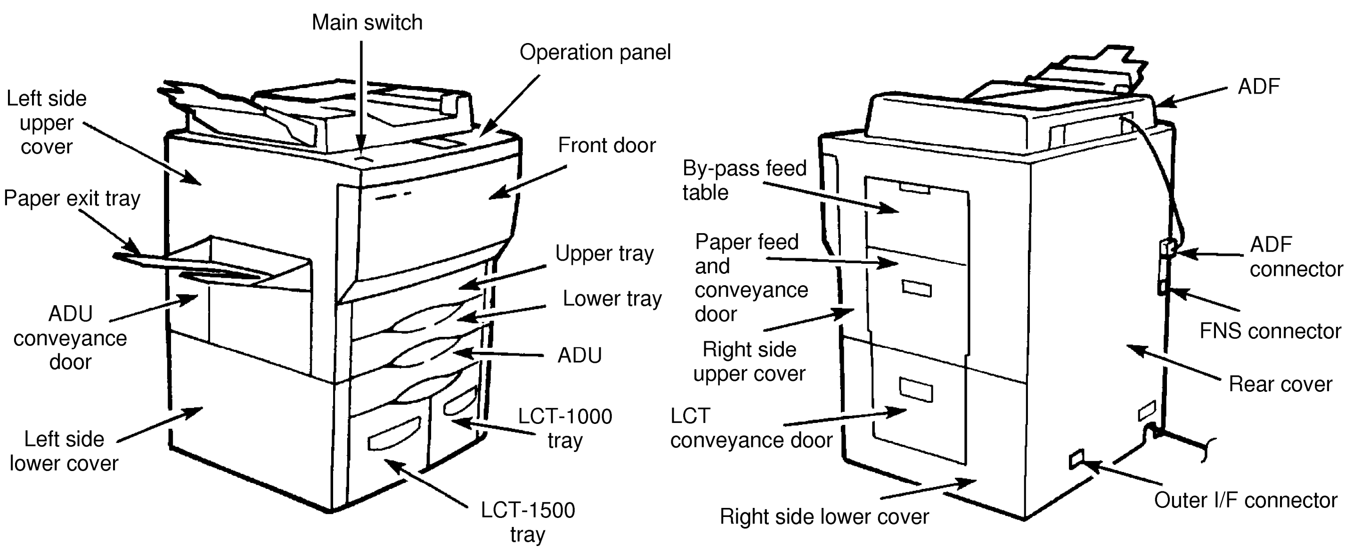

Conveyance roller (upper)
Timing belt
Conveyance roller (lower)
Paper feed roller
Feed roller
B
Double feed prevention roller

## [7] 1500-Tray Paper Feed/Conveyance Drive


Timing belt
B
Horizontal conveyance rollers
Paper feed roller
Feed roller
Timing belt
Double feed prevention roller
LCT paper feed motor (M140)
LCT 1st paper feed CL (CL1)

EXTERNAL SECTION

[1] Composition


Main switch
Operation panel
Left side upper cover
Front door
Paper exit tray
Upper tray
Lower tray
ADU conveyance door
ADU
Left side lower cover
LCT-1000 tray
LCT-1500 tray
ADF
By-pass feed table
Paper feed and conveyance door
ADF connector
FNS connector
Right side upper cover
Rear cover
LCT conveyance door
Outer I/F connector
Right side lower cover

[2] Disassembly and Re-assembly

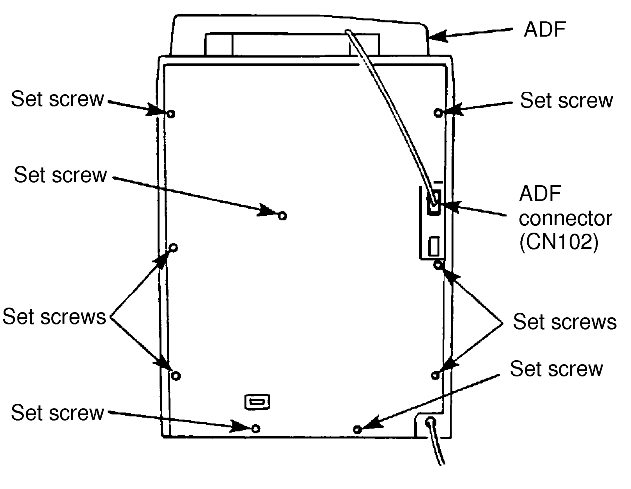
⚠ Caution: Be sure that the power cord has been unplugged from the power outlet.

Caution: When replacing the ozone filter, fix the new filter securely to the inside of the main body.

1. Replacing the ozone filter (S)

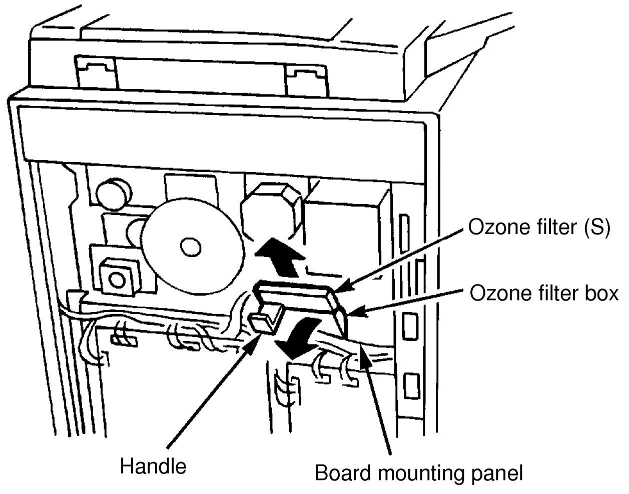
a. Procedure

(1) Remove the nine set screws, then remove the rear cover.


ADF
Set screw
Set screw
Set screw
ADF connector (CN102)
Set screws
Set screws
Set screw
Set screw

(2) Pull out the ozone filter box toward you, then attach the handle to the board mounting panel and fix it.

(3) Pull up the ozone filter (S), then pull it out and remove it.

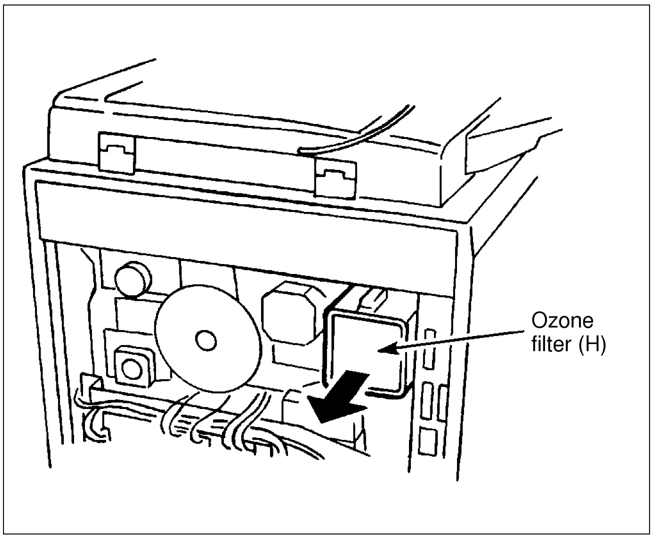

Ozone filter (S)
Ozone filter box
Handle
Board mounting panel

(4) Re-install the ozone filter in the opposite sequence to removal.

2. Replacing the Ozone Filter (H)

a. Procedure

(1) Remove the nine set screws, then remove the rear cover.
(2) Pull forward the ozone filter (H) and remove it.

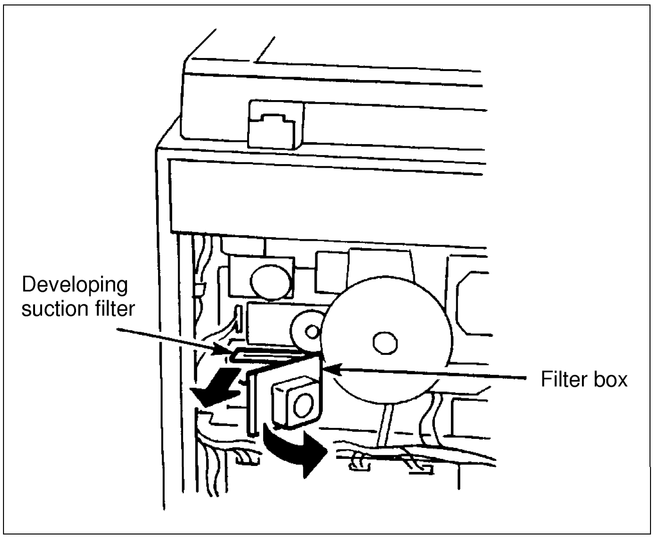

Ozone filter (H)

(3) Re-install the ozone filter in the opposite sequence to removal.

3. Replacing the developing suction filter

a. Procedure

(1) Remove the rear cover.
(2) Remove the lock, open the filter box, and remove the developing suction filter.

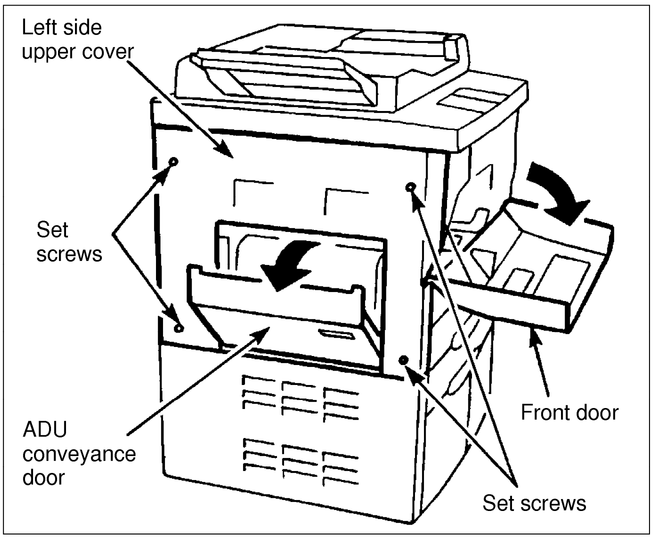

Developing suction filter
Filter box

(3) Re-install the suction filter in the opposite sequence to removal.

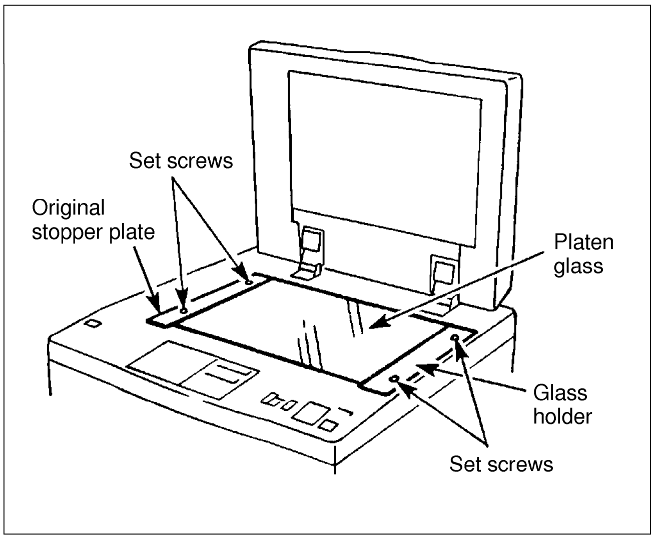
4. Replacing the dust proof filter

a. Procedure

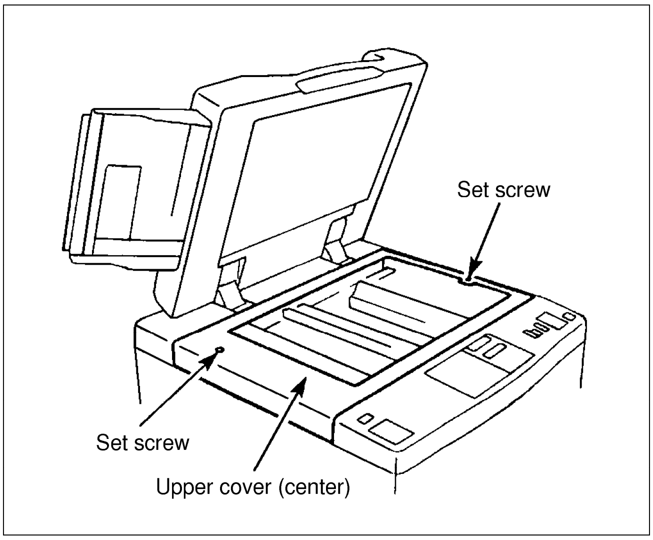
(1) Open the front door and the ADU conveyance door.
(2) Slacken the four set screws, then remove the left side upper cover.


Left side upper cover
Set screws
ADU conveyance door
Front door
Set screws

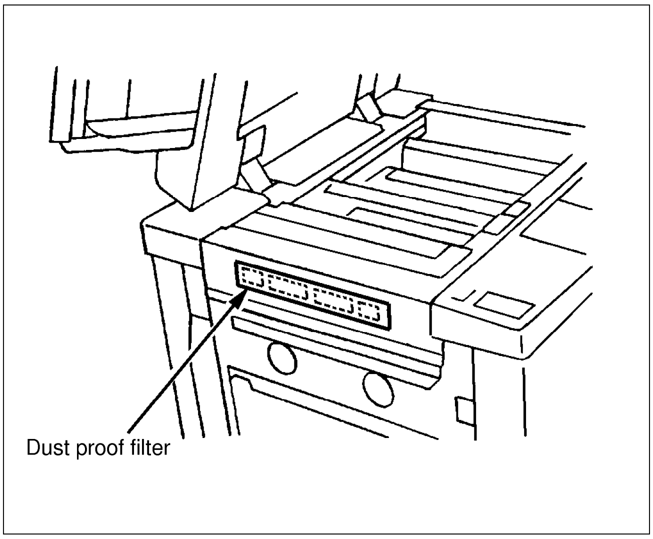
(3) Open the ADF.
(4) Remove the two set screws, then remove the glass holder.
(5) Remove the two set screws, then remove the original stopper plate.
(6) Remove the platen glass.


Set screws
Original stopper plate
Platen glass
Glass holder
Set screws

(7) Remove the two set screws, and remove the upper cover (center).


Set screw
Set screw
Upper cover (center)

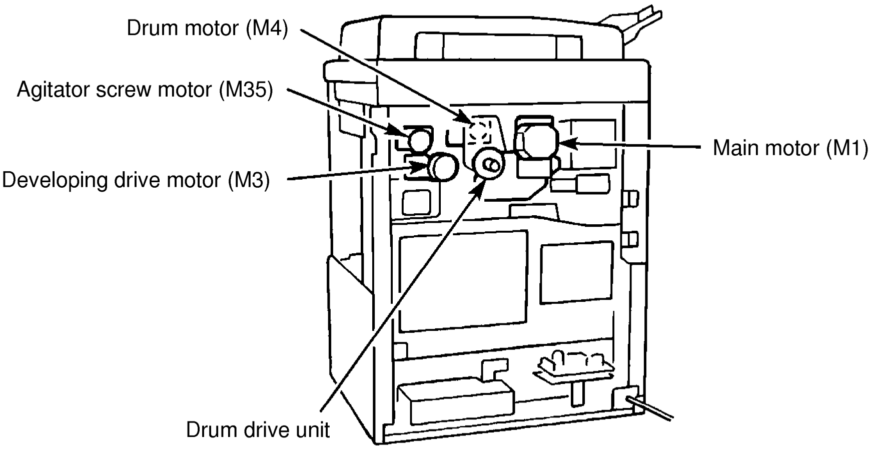
(8) Remove the dustproof filter, then install the new dustproof filter.


Dust proof filter

(9) Install the other parts in the reverse sequence to removal.

DRIVE SECTION

[1] Composition



[2] Mechanisms

	Mechanism	Method
*1	Drum drive	Gear drive (dedicated motor)
*1	Developing sleeve drive	Gear drive (dedicated motor)
*1	Developing agitator drive	Gear drive (dedicated motor)
	2nd paper feed drive	Timing belt + gear drive
	conveyance drive	Timing belt + gear drive
	Fixing and exit drive	Timing belt + gear drive
	ADU lead-in drive	Timing belt + gear drive
	Toner recycle	Timing belt + gear drive

***1: Separation of the different parts of the drive system**
The drum, developing sleeve and developing agitator of this machine are driven by separate motors in order to improve the serviceability of the drum unit and also to improve the developing performance.

[3] Disassembly and Re-assembly

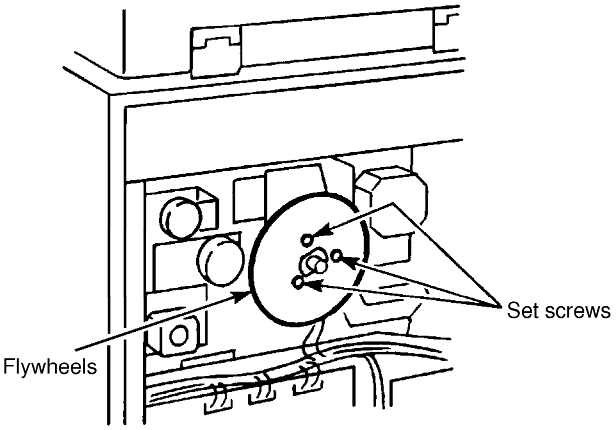
1. Removing and Re-installing the Main Motor Unit

⚠ **Caution: Be sure that the power cord has been unplugged from the power outlet.**

Caution: Be sure to remove the drum carriage before removing or re-installing the main motor unit.
If you leave the drum carriage installed, the cleaning blade is likely to be damaged because the drum will turn when you remove or re-install the flywheel.

a. Procedure

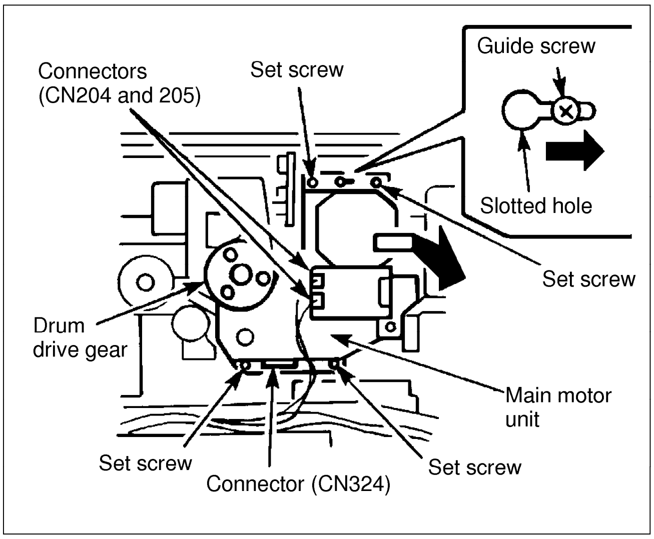
(1) Remove the drum unit from the main body. (Refer to "Drum unit section".)
(2) Remove the nine set screws, then remove the rear cover.
(3) Remove the three set screws, then remove the flywheels (two).



(4) Disconnect the three connectors (CN204, 205 and 324), then remove the cable from the wiring clamp.

(5) Remove the four set screws, slide the main motor unit to the right, then pull it forward and remove it.

Caution: DO NOT strike the main motor unit against the drum drive gear when removing or re-installing it.


Guide screw
Connectors (CN204 and 205)
Set screw
Slotted hole
Set screw
Drum drive gear
Main motor unit
Set screw
Connector (CN324)
Set screw

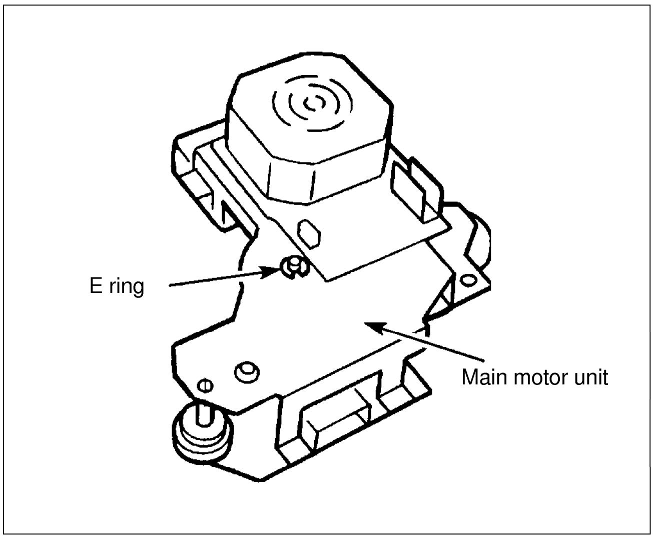
(6) Re-install the main motor unit in the opposite sequence to removal.

2. Replacing the paper feed drive shaft and Fixing input gear

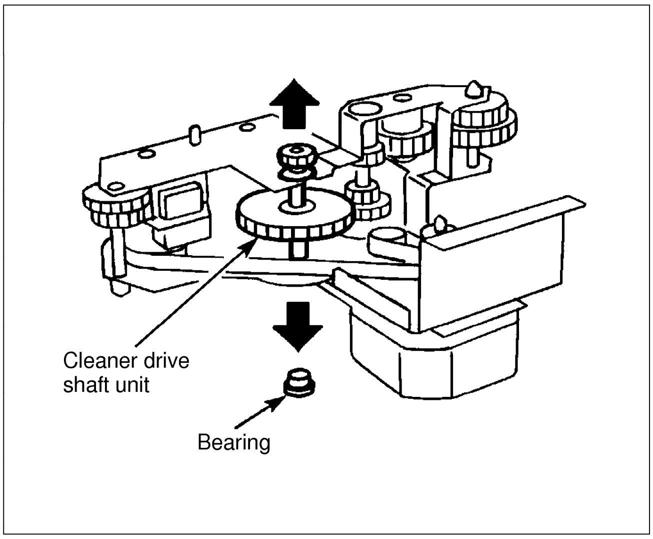
a. Procedure

(1) Remove the main motor unit.

(2) Remove the E ring.

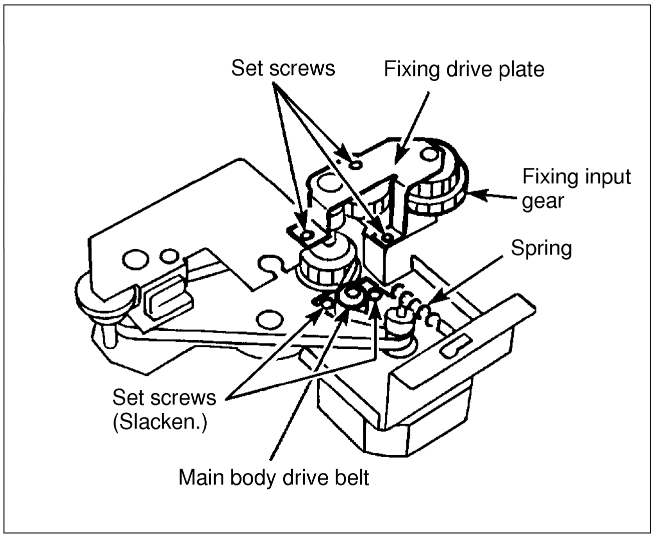

E ring
Main motor unit

(3) Remove the one bearings, then remove the cleaner drive shaft unit.


Cleaner drive shaft unit
Bearing

(4) Remove the spring, then slacken the two set screws and remove the tension from main body drive belt.

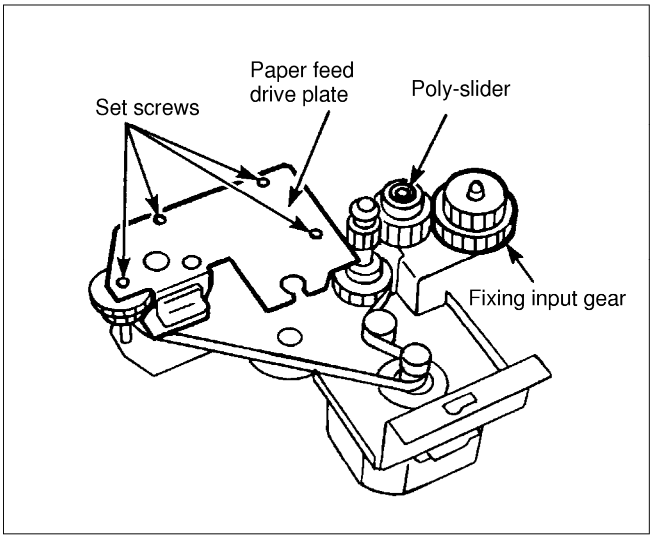
(5) Remove the three set screws, then remove the fixing drive plate.


Set screws
Fixing drive plate
Fixing input gear
Spring
Set screws (Slacken.)
Main body drive belt

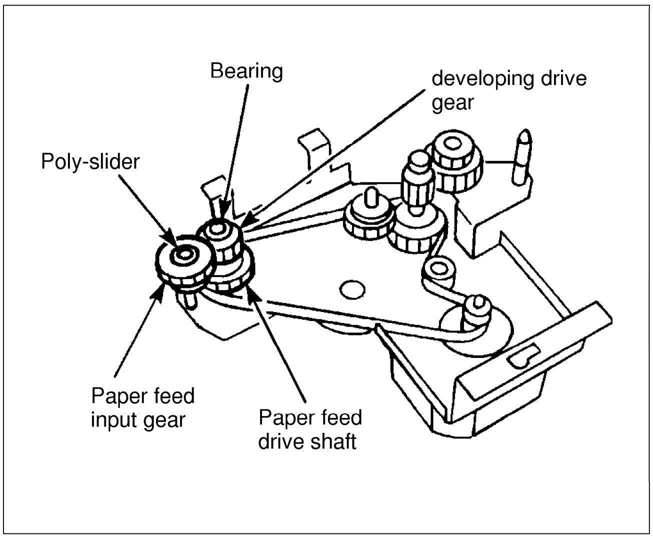
Caution: Be careful not to lose the poly-slider when installing the fixing drive plate.

(6) Remove the fixing input gear.

(7) Remove the four set screws, then remove the paper feed drive plate.

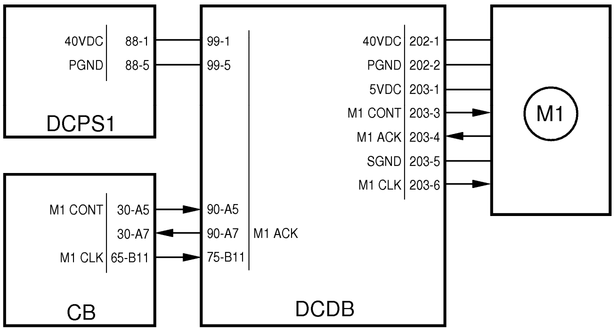

Set screws
Paper feed drive plate
Poly-slider
Fixing input gear

(8) Remove the bearing, poly-slider and paper feed input gear.
(9) Remove developing drive gear, then pull out the pin remaining on the shaft.
(10) Remove the paper feed drive shaft.


Bearing
developing drive gear
Poly-slider
Paper feed input gear
Paper feed drive shaft

(11) Re-install the paper feed drive shaft and fixing input gear in the opposite sequence to removal.

[4] M1 (main) Control


40VDC
PGND
88-1
88-5
DCPS1
M1 CONT
M1 CLK
30-A5
30-A7
65-B11
CB
99-1
99-5
90-A5
90-A7
75-B11
M1 ACK
40VDC
PGND
5VDC
M1 CONT
M1 ACK
SGND
M1 CLK
202-1
202-2
203-1
203-3
203-4
203-5
203-6
DCDB
M1

M1 (main) is controlled by the CB (control board) via the DCDB (DC driver board).

1. Operation

M1 is a 40 V drive DC motor which drives the ADU paper exit/conveyance, toner recycle, conveyance, 2nd paper feed and fixing sections. M1 is PLL-controlled by feedback signals from a speed sensor installed inside M1 itself, maintaining it at a constant speed.

M1 goes ON when the Copy button is pressed, and goes OFF again when the final copy has been exited.

If the upper fixing roller fails to reach the set temperature within the specified time from the start of warmup, M1 remains ON until the completion of warmup.

2. Signals

a. Input signal

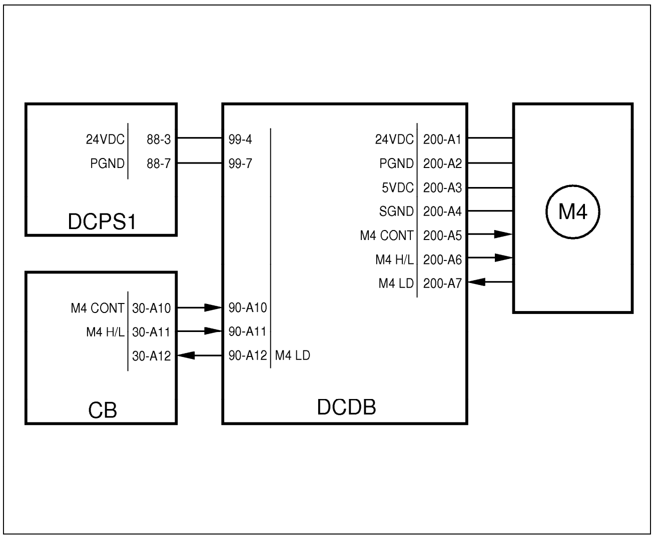
(1) M1 ACK (M1 → DCDB → CB)
[L] is output when M1 reaches the specified temperature.

b. Output signals

(1) M1 CONT (CB → DCDB → M1)
M1 drive control signal
[L]: M1 ON
[H]: M1 OFF

(2) M1 CLK (CB → DCDB → M1)
M1 rotational speed control reference clock signal

[5] M4 (drum) control


DCPS1
24VDC 88-3
PGND 88-7
CB
M4 CONT 30-A10
M4 H/L 30-A11
30-A12
DCDB
99-4
99-7
90-A10
90-A11
90-A12 M4 LD
24VDC 200-A1
PGND 200-A2
5VDC 200-A3
SGND 200-A4
M4 CONT 200-A5
M4 H/L 200-A6
M4 LD 200-A7
M4

M4 (drum) is controlled by the CB (control board) via the DCDB (DC driver board).

1. Operation

M4 is a 24 V drive DC motor which drives the drum and the cleaning guide roller. M4 is PLL-controlled by reference Signal and feedback signal from a speed sensor installed inside M4 itself, maintaining it at a constant speed.

M4 goes ON when the Copy button is pressed, and goes OFF again when the final copy has been exited.

2. Signals

a. Input signal

(1) M4LD (M4 → DCDB → CB)
[L] is output when M4 reaches the specified speed.

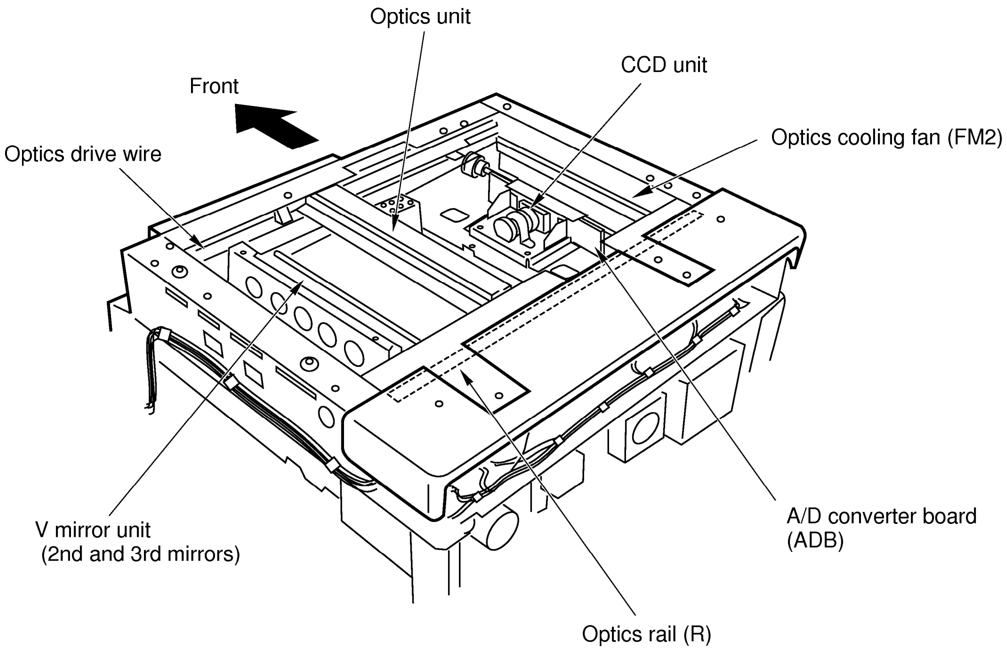
b. Output signals

(1) M4CONT (CB → DCDB → M4)
M4 drive control signal
[L]: M4 ON
[H]: M4 OFF

(2) M4 H/L (CB → DCDB → M4)
M4 rotational speed switchover signal
Normally [H]: 280 mm/sec

READ SECTION

[1] Composition


Optics unit
CCD unit
Front
Optics cooling fan (FM2)
Optics drive wire
V mirror unit
(2nd and 3rd mirrors)
A/D converter board
(ADB)
Optics rail (R)

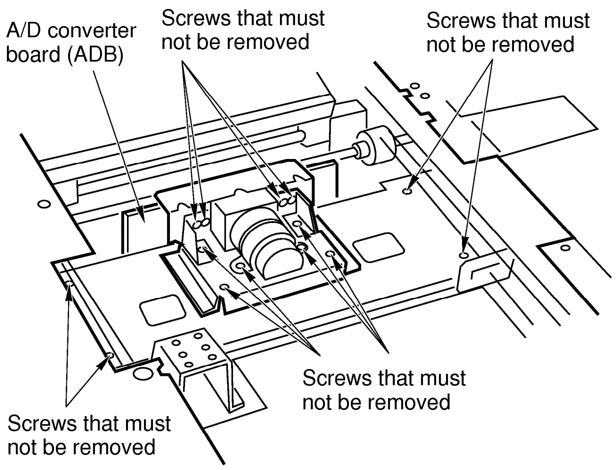
[2] Mechanisms

Mechanism	Method
Light source	Halogen lamp (170 W)
Exposure	Light source shift slit exposure
Scanning	1st, 2nd and 3rd mirror shift
Lamp power supply	Lamp cord
Cooling of optics	Cooling of intake air using a fan

[3] Disassembly and Re-assembly

1. Screws that must not be removed

△C **a. The 16 set screws of the CCD unit**


A/D converter
board (ADB)
Screws that must
not be removed
Screws that must
not be removed
Screws that must
not be removed
Screws that must
not be removed

△C **Note:** Two screws are behind the ADB in the figure above.

2. Removing and Re-installing the CCD Unit

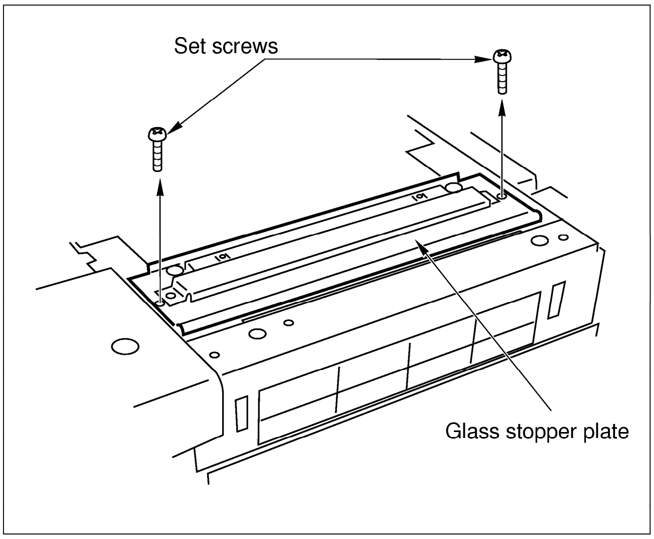
⚠ Caution: Be sure that the power cord has been unplugged from the power outlet.

Caution: Be sure to perform image adjustment after installing the CCD unit. (For details, refer to "Adjustment section".)

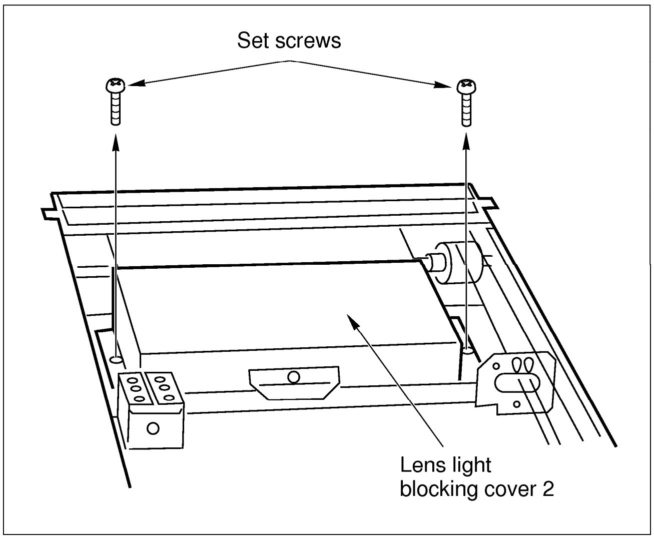
a. Procedure

(1) Remove the glass holder plate, original stopper plate, platen glass and upper cover (center).

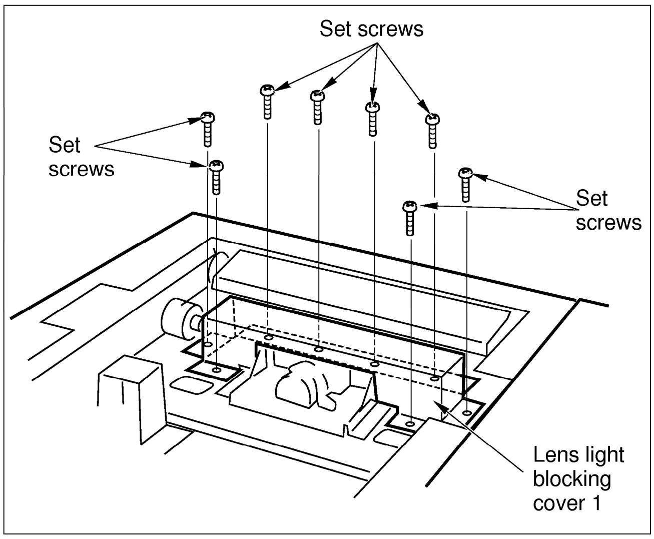
(2) Remove the two set screws, then remove the glass stopper plate.


Set screws
Glass stopper plate

(3) Remove the two set screws, then remove the lens light blocking cover 2.

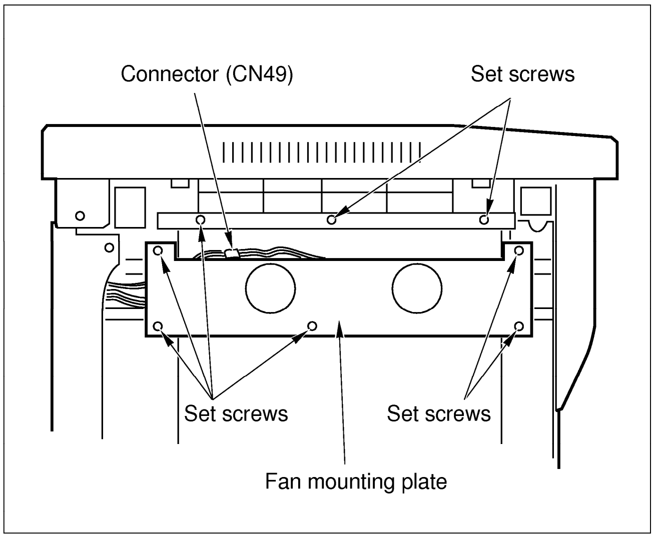

Set screws
Lens light blocking cover 2

(4) Remove the eight set screws, then remove the lens light blocking cover 1.

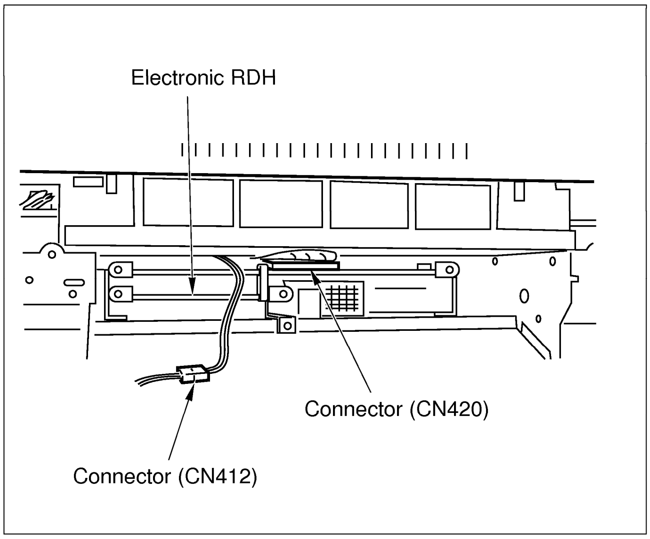

Set screws
Set screws
Set screws
Lens light blocking cover 1

(5) Disconnect the connector (CN49).

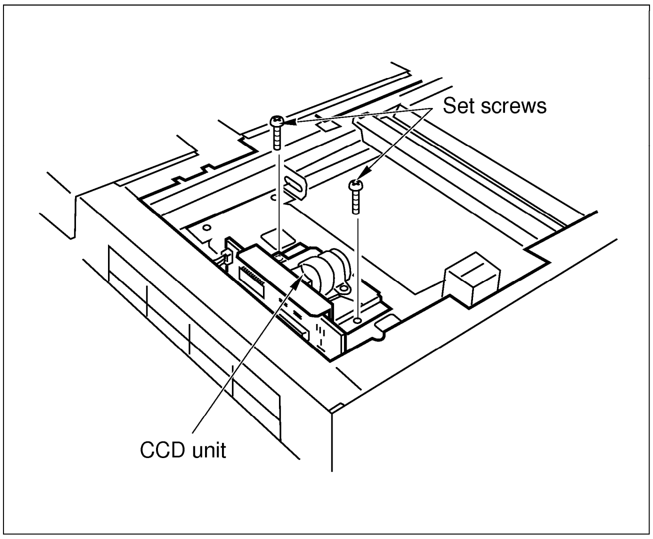
(6) Remove the eight set screws, then remove the fan mounting plate.


Connector (CN49)
Set screws
Set screws
Set screws
Fan mounting plate

(7) Disconnect the two connectors (CN420 and 412).


Electronic RDH
Connector (CN420)
Connector (CN412)

(8) Remove the two set screws, then remove the CCD unit.


Set screws
CCD unit

(9) Re-install the CCD unit in the opposite sequence to removal.

3. Replacing the Exposure Lamp

Caution:

1. **Be sure that the power cord has been unplugged from the power outlet.**
2. **DO NOT touch the glass of the exposure lamp with bare hands.**

Caution:

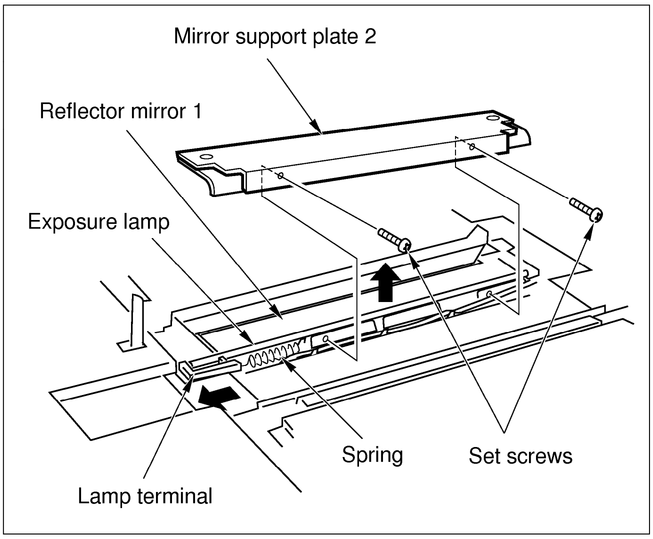
1. Be sure to install the exposure lamp with the maker's mark facing the front side of the main body.
2. The nipple on the exposure lamp must face the paper feed side.
3. Be sure to check the image after installing the exposure lamp. (For details, refer to "Adjustment section".)

a. Procedure

(1) Remove the glass holder plate, original stopper plate, platen glass and the upper cover (center).

(2) Move the exposure unit to the notch on the main frame fitted on the paper exit side.

(3) Remove the two set screws, then remove mirror support plate 2.


Mirror support plate 2
Reflector mirror 1
Exposure lamp
Spring
Set screws
Lamp terminal

(4) To prevent the exposure lamp from dropping out, insert a sheet of paper from beneath reflector mirror 1 and wrap it around the exposure lamp.

(5) Remove the spring, then slide the lamp terminal to the rear and remove the exposure lamp. (Lift out the lamp while holding it with the paper that you wrapped around it.)

(6) Re-install the exposure lamp in the opposite sequence to removal.

4. Removing the exposure unit

⚠ **Caution: Be sure that the power cord has been unplugged from the power outlet.**

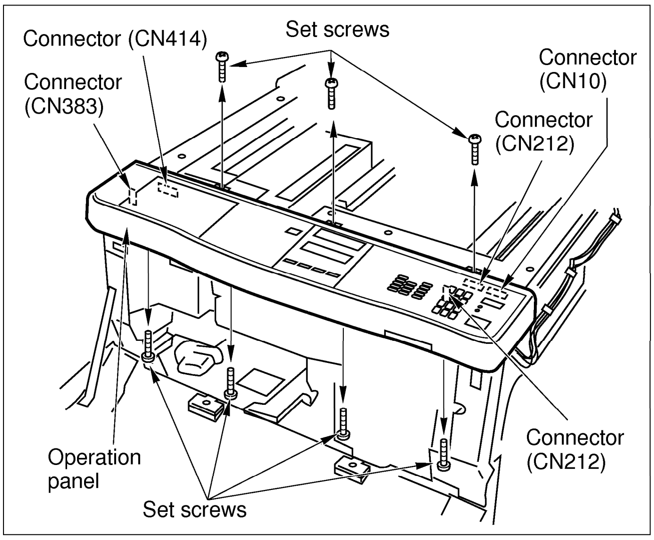
Caution:

1. Use a wire positioning jig when installing the exposure unit. (For the method of installing this jig, refer to the sub-section describing the method of installing the exposure unit.)
2. Be sure to perform image adjustment after installing the exposure unit. (For details, refer to "Adjustment section".)

a. Procedure

(1) Remove the glass holder plate, original stopper plate, platen glass and upper cover (center).

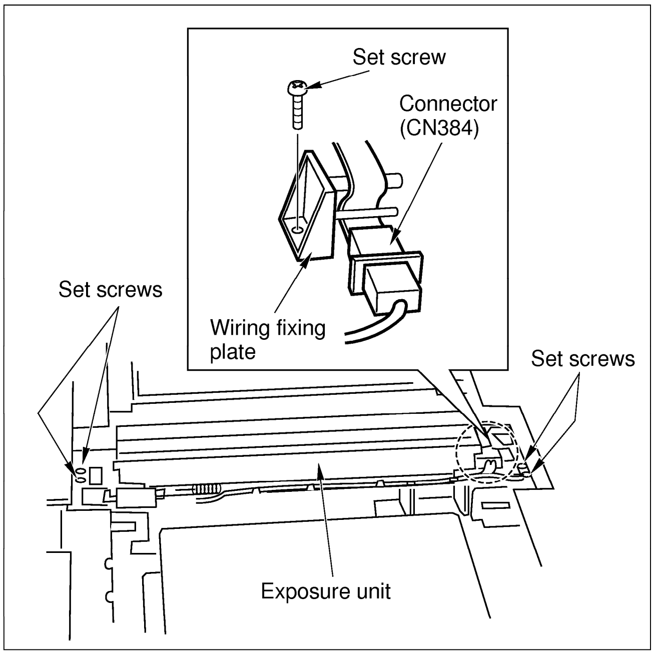
(2) Remove the seven set screws, then remove the operation panel and disconnect the five connectors (CN10, 212, 213, 383 and 414).


Connector (CN414)
Set screws
Connector (CN10)
Connector (CN383)
Connector (CN212)
Operation panel
Connector (CN212)
Set screws

(3) Move the exposure unit to the notch in the main body frame on the paper exit side.

(4) Remove the set screw, then remove the wiring fixing plate and disconnect the connector (CN384).

(5) Remove the four set screws, then remove the exposure unit.


Set screw
Connector (CN384)
Set screws
Wiring fixing plate
Set screws
Exposure unit

5. Installing the Exposure Unit

Caution:

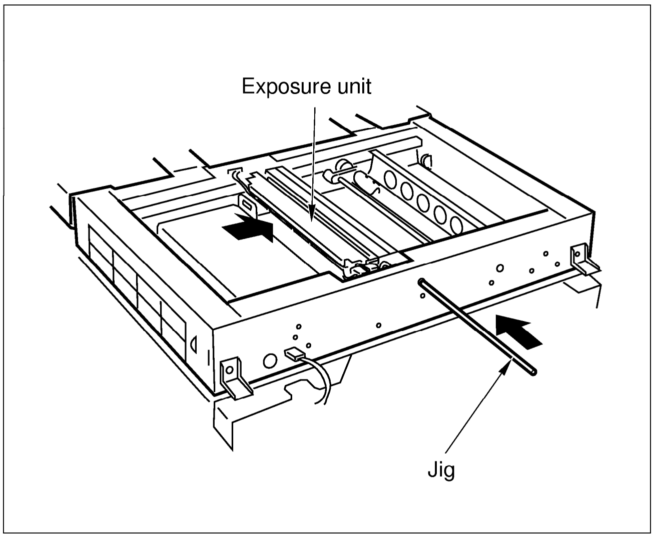
1. Use a wire positioning jig when installing the exposure unit.
2. Be sure to perform image adjustment after installing the exposure unit. (For details, refer to "Adjustment section".)

a. Procedure

(1) Insert the jig into the exposure unit mounting position from the front.

(2) Slide the exposure unit to the paper feed side until it touches the jig.

(3) Install the exposure unit on the optics wire using the four set screws.


Exposure unit
Jig

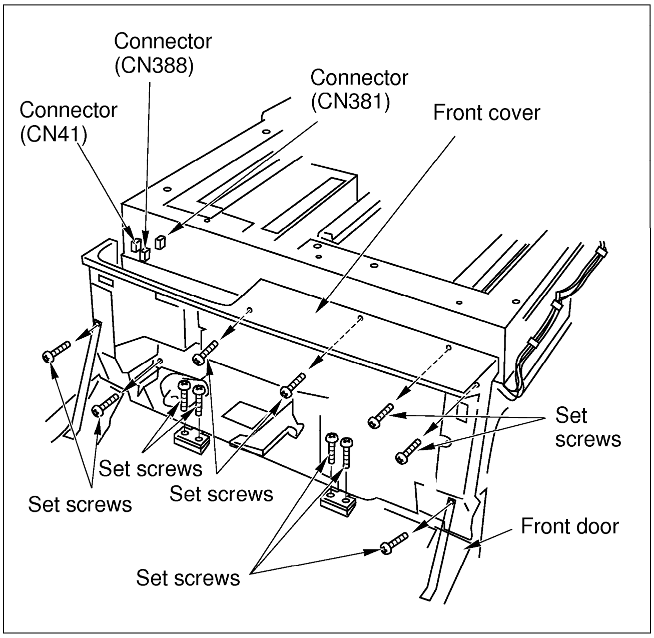
6. Installing the optics wire

Caution:

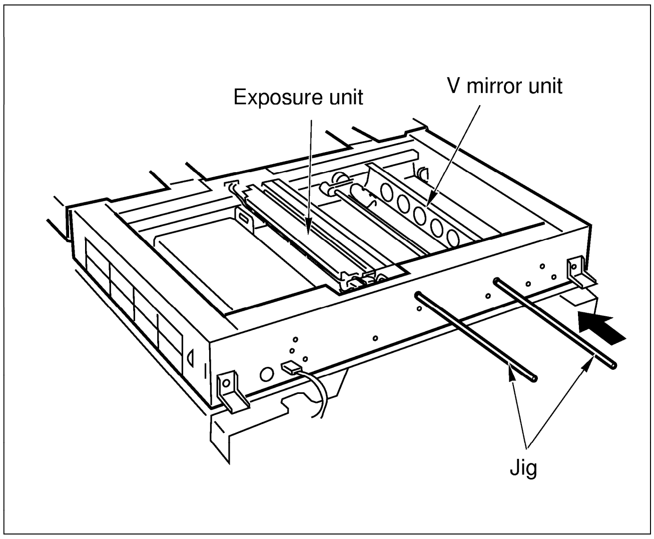
1. When winding the wire around the pulley, be sure to run the wire tightly to ensure that it does not ride up the side of the pulley.
2. Be sure to perform image adjustment after replacing or re-installing the wire. (For details, refer to "Adjustment section".)

a. Procedure

(1) Remove the exposure unit.
(2) Remove the glass stopper plate.
(3) Remove the six set screws, then remove the front door.
(4) Disconnect the three connectors (CN41, 381 and 388).
(5) Remove the five set screws, then remove the front cover.


Connector (CN388)
Connector (CN381)
Connector (CN41)
Front cover
Set screws
Set screws
Set screws
Set screws
Set screws
Front door

(6) Move the V mirror unit to the paper feed side, then insert the jigs from the front so as to fix the V mirror unit. Ensure that the jigs pass through the V mirror unit.
(7) Insert the jigs to the exposure unit mounting position from the front.

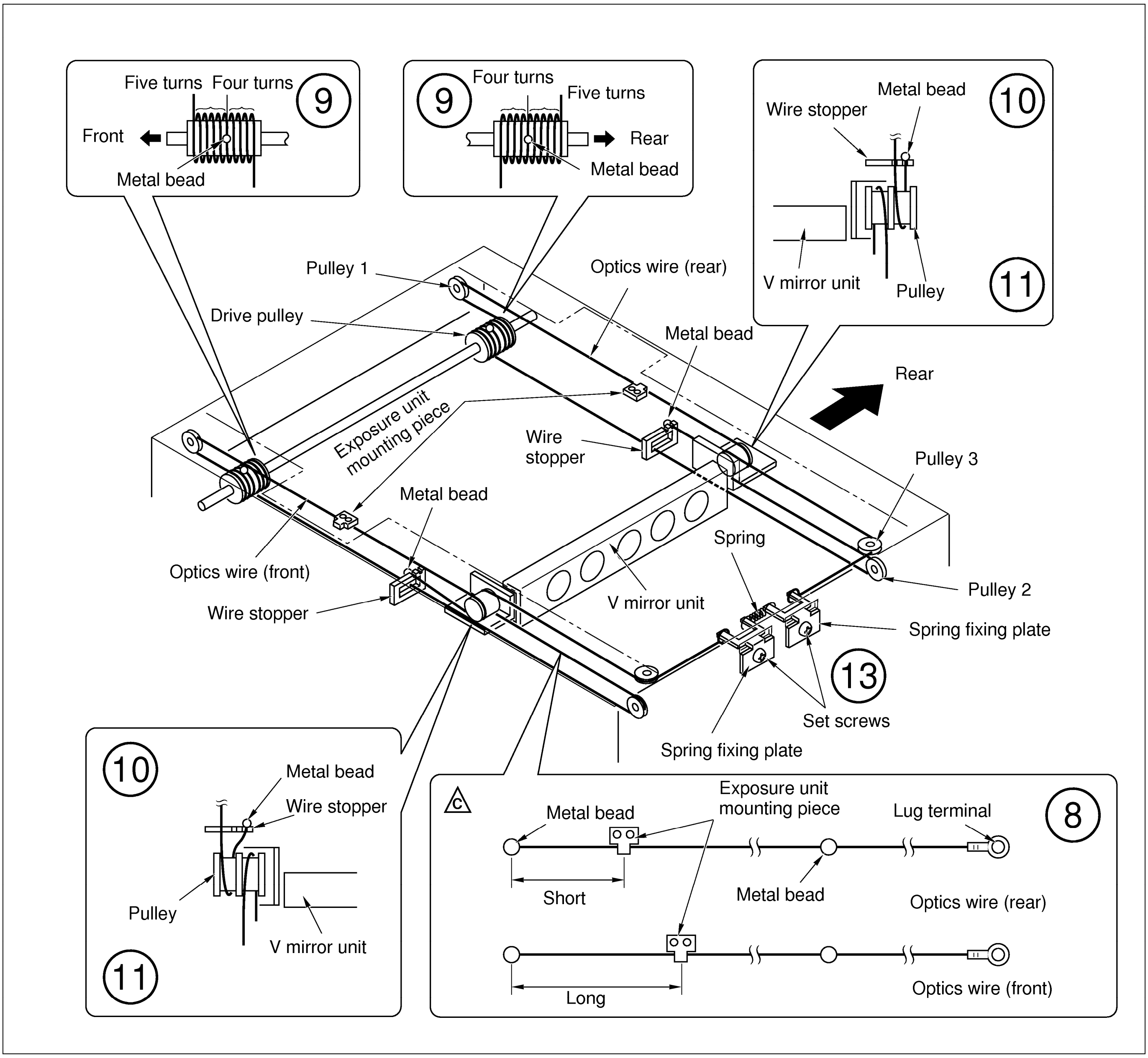

Exposure unit
V mirror unit
Jig

(8) The exposure unit mounting piece is installed on the optics wire in advance. The position of the mounting piece differs depending upon whether it is on the front or the rear wire. Use the wire that has the shorter length from the metal bead at the end to the mounting piece, at the rear.

(9) Place the metal bead at the mid-point of each optics wire in the mounting hole of the drive pulley, then wind five turns around the pulley to the outside, and four turns to the inside, starting from this point.

Caution:

1. Ensure that there is a metal bead at the end of the outer wire, and a wire terminal at the end of the inner wire.
2. Pull out the outer wire from the top of the drive pulley in the paper exit direction, and pull out the inner wire from the bottom of the drive pulley in the paper feed direction.


Five turns
Four turns
9
Front
Metal bead
9
Four turns
Five turns
Rear
Metal bead
Wire stopper
Metal bead
10
V mirror unit
Pulley
11
Pulley 1
Drive pulley
Optics wire (rear)
Metal bead
Rear
Exposure unit mounting piece
Wire stopper
Pulley 3
Metal bead
Spring
Optics wire (front)
Wire stopper
V mirror unit
Pulley 2
Spring fixing plate
13
Set screws
Spring fixing plate
10
Metal bead
Wire stopper
Pulley
V mirror unit
11
C
Metal bead
Exposure unit mounting piece
Lug terminal
8
Short
Metal bead
Optics wire (rear)
Long
Optics wire (front)

(10) After winding the outer wire, fix it to the wire stopper via the outer side of pulley 1 and the V mirror pulley.

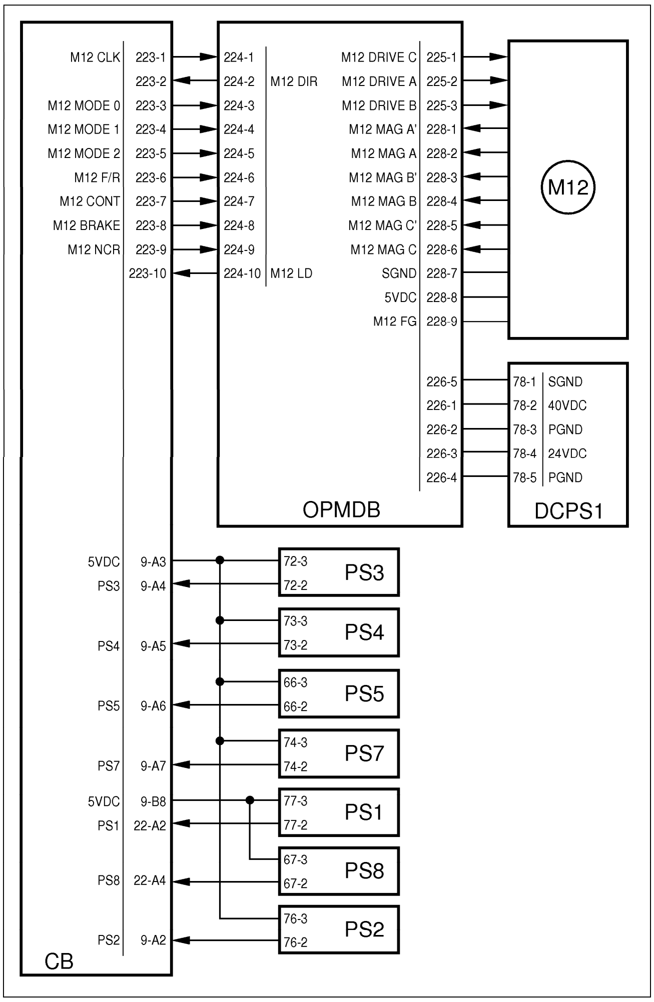
Note: There are two grooves in the wire stopper. Ensure that the outer groove is at the rear and the inner groove at the front.

(11) Pass the inner wire through the notch in the wire stopper, reverse it at pulley 2, then pass it around the inside of the V mirror pulley and also around pulley 3, in that sequence, and attach the wire terminal to the spring fixing plate. At this time, temporarily fix the spring fixing plate with the set screw.

(12) Install the other wire using the same procedure.

(13) Slacken each screw that was temporarily fixed, then install the spring on the spring fixing plate and fix the each screw once again.

[4] M12 (optics drive) Control


M12 CLK 223-1
223-2
M12 MODE 0 223-3
M12 MODE 1 223-4
M12 MODE 2 223-5
M12 F/R 223-6
M12 CONT 223-7
M12 BRAKE 223-8
M12 NCR 223-9
223-10
224-1
224-2 M12 DIR
224-3
224-4
224-5
224-6
224-7
224-8
224-9
224-10 M12 LD
M12 DRIVE C 225-1
M12 DRIVE A 225-2
M12 DRIVE B 225-3
M12 MAG A' 228-1
M12 MAG A 228-2
M12 MAG B' 228-3
M12 MAG B 228-4
M12 MAG C' 228-5
M12 MAG C 228-6
SGND 228-7
5VDC 228-8
M12 FG 228-9
M12
226-5 78-1 SGND
226-1 78-2 40VDC
226-2 78-3 PGND
226-3 78-4 24VDC
226-4 78-5 PGND
OPMDB
DCPS1
5VDC 9-A3 72-3
PS3 9-A4 72-2 PS3
73-3
PS4 9-A5 73-2 PS4
66-3
PS5 9-A6 66-2 PS5
74-3
PS7 9-A7 74-2 PS7
5VDC 9-B8 77-3
PS1 22-A2 77-2 PS1
67-3
PS8 22-A4 67-2 PS8
76-3
PS2 9-A2 76-2 PS2
CB

M12 (optics drive) is driven by the OPMDB (optics motor drive board), and is controlled by the CB (control board).
Related signals are PS1 (optics overrun), PS2 (optics ADF-EE), PS3 (shading), PS4 (paper restart), PS5 (optics return), PS7 (optics timing) and PS8 (platen glass sensor).

1. Operation

a. Operation of M12

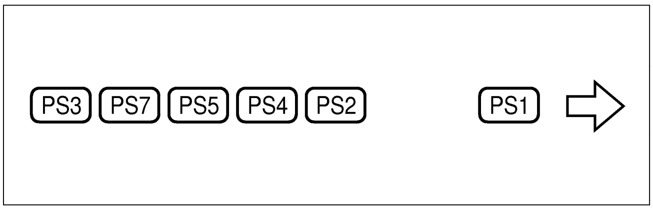
M12 is a 3-phase brushless DC motor which is driven using a 3-phase bipolar method. The current flowing through the windings is switched according to the position of the rotor which is detected by a sensor (magnetic sensor) inside the motor.

b. Scanning operation of the exposure unit

Scanning speed

Magnification	Scanning speed
Forward	280 mm/sec (life size)
Return	1520 mm/sec

c. Position of each sensor

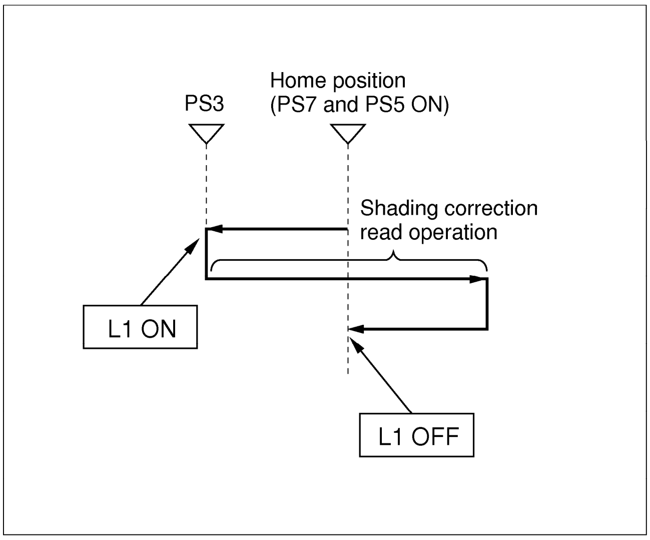

PS3
PS7
PS5
PS4
PS2
PS1

d. Home position sensor of the exposure unit

If the exposure unit is not in the home position when the main switch is turned ON, M12 rotates at low speed in the reverse direction until PS7 (optics sensor) and PS5 (optics return) are turned ON, thus detecting the fact that the optics unit is in the home position.

e. Shading correction read operation

At the position where PS3 (shading) goes ON, the light reflected from the white reference plate installed underneath the glass stopper plate is read.

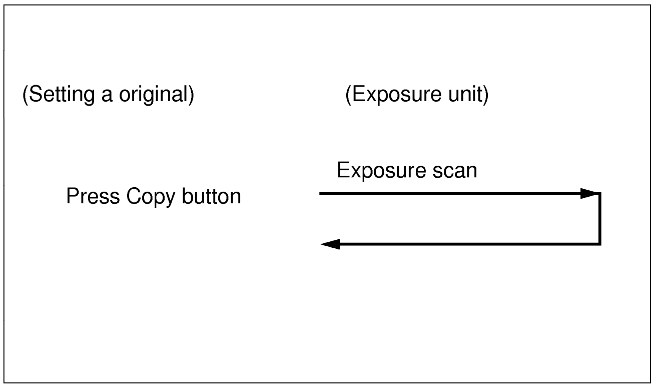

PS3
Home position
(PS7 and PS5 ON)
Shading correction
read operation
L1 ON
L1 OFF

f. Other operations

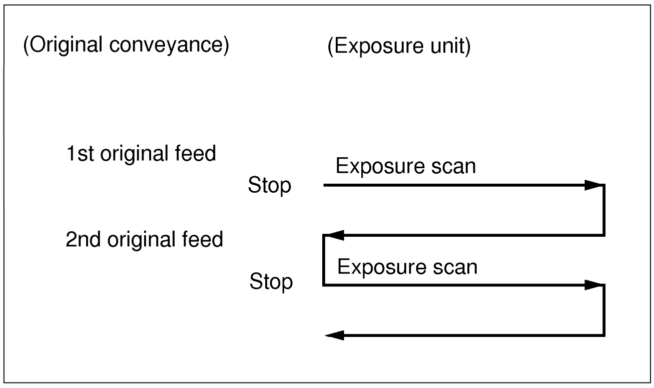
(1) During copying

a) When manual density has been selected

① During a platen copy operation

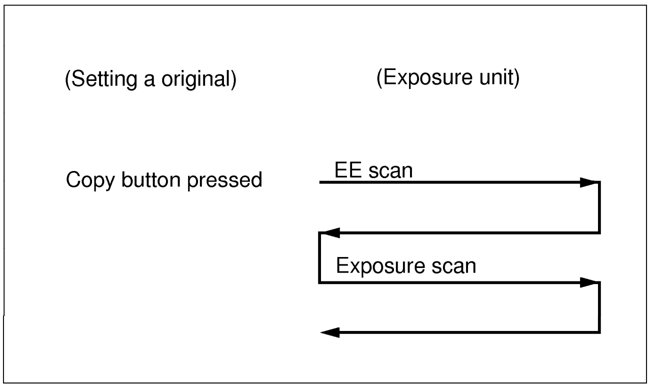

(Setting a original)
(Exposure unit)
Press Copy button
Exposure scan

② During an ADF copy operation

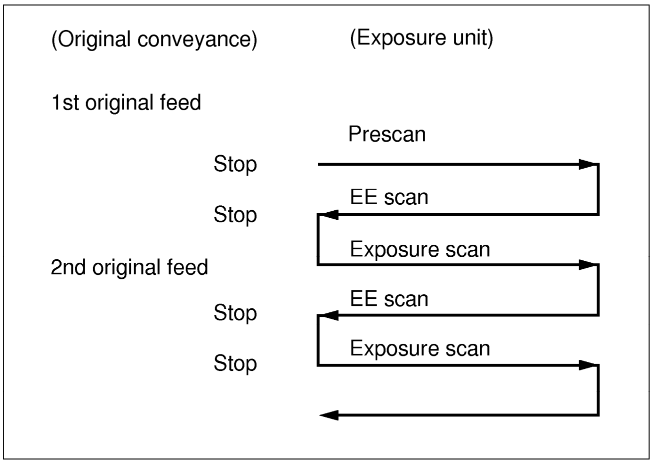

(Original conveyance)
(Exposure unit)
1st original feed
Stop
Exposure scan
2nd original feed
Stop
Exposure scan

b) EE mode

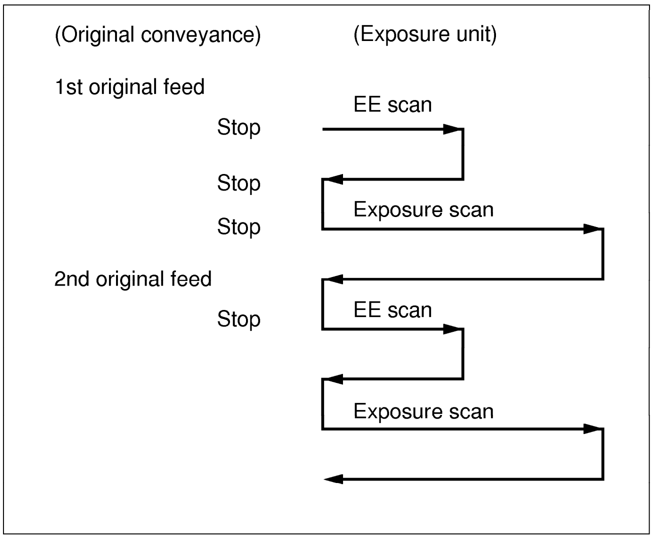
① During a platen copy operation


(Setting a original)
(Exposure unit)
Copy button pressed
EE scan
Exposure scan

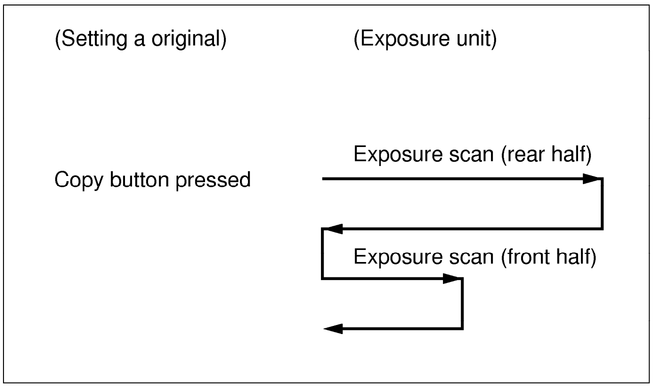
② During an ADF copy operation (1-1)


(Original conveyance)
(Exposure unit)
1st original feed
Prescan
Stop
EE scan
Stop
Exposure scan
2nd original feed
EE scan
Stop
Exposure scan
Stop

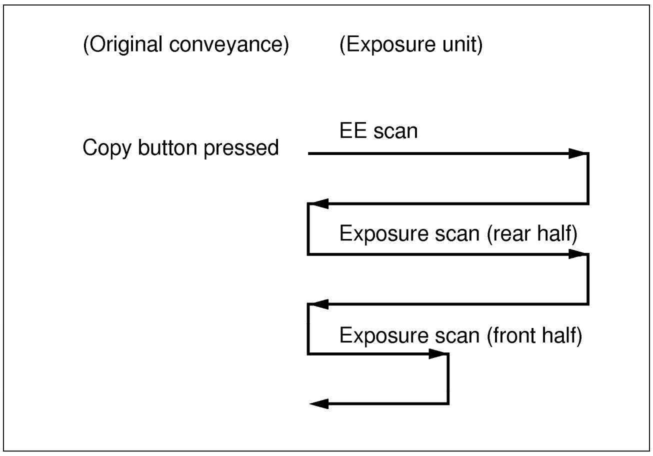
③ During an ADF copy operation (1-2, 2-1, 2-2)


(Original conveyance)
(Exposure unit)
1st original feed
EE scan
Stop
Stop
Exposure scan
Stop
2nd original feed
EE scan
Stop
Exposure scan

(2) Book copy mode
a) When manual density has been selected


(Setting a original)
(Exposure unit)
Exposure scan (rear half)
Copy button pressed
Exposure scan (front half)

b) EE mode


(Original conveyance)
(Exposure unit)
EE scan
Copy button pressed
Exposure scan (rear half)
Exposure scan (front half)

2. Signals

a. Input signals

(1) PS1 (PS1 → CB)
Exposure unit overrun detection signal
[L]: The exposure unit is in the overrun position.
[H]: The exposure unit is not in the overrun position.

(2) PS2 (PS2 → CB)
The brake is applied to M12 after the specified period from when PS2 goes ON during the return scan of the exposure unit. Also, when the ADF (1-1 mode) is used, EE read starts when PS2 goes ON.
[L]: Exposure unit detected
[H]: Exposure unit not detected

(3) PS3 (PS3 → CB)
White reference plate read position detection signal
[L]: The exposure unit is in the white reference plate read position.
[H]: The exposure unit is not in the white reference plate read position.

(4) PS4 (PS4 → CB)
The timer that determines the 2nd paper feed start timing starts when PS4 goes ON during the forward scan of the exposure unit.
[L]: Exposure unit detected
[H]: Exposure unit not detected

(5) PS5 (PS5 → CB)
This signal is used to detect the return position and also the home position of the exposure unit.
[L]: Exposure unit detected
[H]: Exposure unit not detected

(6) PS7 (PS7 → CB)
This signal is used to detect the return position and also the home position of the exposure unit.
[L]: Exposure unit detected
[H]: Exposure unit not detected

(7) PS8 (PS8 → CB)
This signal is used to detect the original glass is set or not.
[L]: Original glass detected
[H]: Original glass not detected

(8) M12 DIR (OPMDB → CB)
M12 rotational direction detection signal
[L]: Reverse rotation (return operation)
[H]: Forward rotation (forward operation)

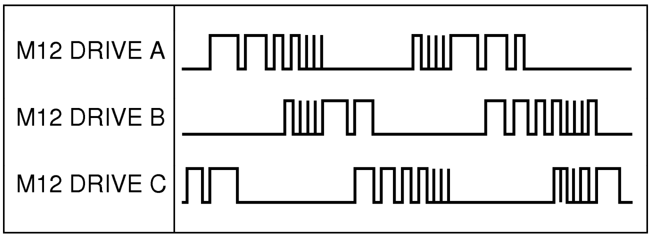
(9) M12LD (OPMDB → CB)
[H] is output when M12 reaches the specified speed.

(10) M12 MAG A/A' (M12 → OPMDB)
M12 MAG B/B' (M12 → OPMDB)
M12 MAG C/C' (M12 → OPMDB)
These are the output signals from the sensors (magnetic sensors) contained in M12. OPMDB detects the position of the rotor of the motor by means of these signals, and switches over the M12 DRIVE A to C output.

(11) M12 FG (M12 → OPMDB)
This is a feedback signal from the rotational speed sensor contained in M12. It is compared with the M12 CLK signal from the CB, and the output voltage adjusted so that the feedback signal becomes the same as the M12 CLK signal, thus controlling the rotational speed of M12.

b. Output signals

(1) M12 DRIVE A, B, C (OPMDB → M12)
This is the M12 drive signal. While M12 is rotating, voltages are output sequentially from M12 DRIVE A to C, and applied to M12.
The voltage from each output that is applied to M12 consists of the pulses shown below. The pulse width of this output changes according to the rotation condition of M12, as shown in the figure, and as a result the RMS value of the voltage applied to M12 changes, causing the speed to be regulated.



(2) M12 CONT (CB → OPMDB)
M12 ON/OFF control signal
[L]: M12 ON
[H]: M12 OFF

(3) M12 CLK (CB → OPMDB)
M12 rotational speed control reference clock signal

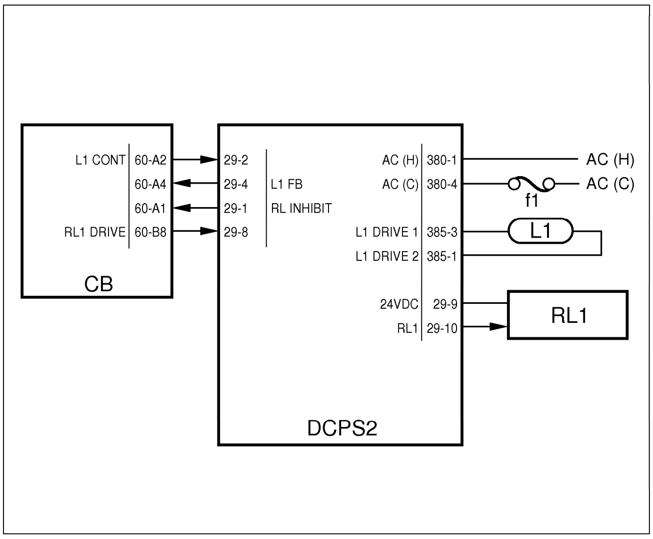
(4) M12 F/R (CB → OPMDB)
Signal used to control the rotational direction of M12
[L]: Forward operation
[H]: Return operation

(5) M12 BRAKE (CB → OPMDB)
M12 brake control signal

(6) M12 NCR (CB → OPMDB)
M12 brake control signal

(7) M12 MODE 0, 1, 2 (CB → OPMDB)
M12 rotational speed control signal
Eight rotational speed modes are activated by combinations of these three signals.

[5] Exposure control


L1 CONT
60-A2
60-A4
60-A1
RL1 DRIVE
60-B8
CB
29-2
29-4
L1 FB
29-1
RL INHIBIT
29-8
AC (H)
380-1
AC (C)
380-4
L1 DRIVE 1
385-3
L1 DRIVE 2
385-1
24VDC
29-9
RL1
29-10
DCPS2
AC (H)
AC (C)
f1
L1
RL1

Power is supplied to L1 (exposure) from the CVR (exposure lamp regulated power supply) in DCPS2 (power supply unit 2), and is controlled by the CB (control board).

1. Operation

a. L1 light intensity control

The light intensity from L1 is determined by the output voltage from the CVR circuit in DCPS2.

Rated output: 60 VDC

b. Protection from abnormality

- * Hardware timer circuit
  If L1 remains ON continuously for at least 40±8 seconds for some reason or other, the hardware timer in the CVR of DCPS2 operates, turning OFF RL1 (main). As a result, current to the AC loads including L1 is cut off.
- * Temperature fuse
  If L1 exceeds a certain temperature, f1 (optics temperature fuse) melts, cutting off the current to L1. (f1 melting temperature: 121 °C)

2. Signals

a. Input signals

(1) L1 FB (DCPS2 → CB)

This signal informs the CB of the lit or unlit state of L1.

[L]: L1 ON

[H]: L1 OFF or broken

(2) RL1 INHIBIT (DCPS2 → CB)

This signal turns OFF RL1 if an abnormality occurs in the machine.

[L]: Abnormal

[H]: Normal

b. Output signal

(1) L1 CONT (CB → DCPS2)

This is a control signal which turns L1 ON and OFF.

[L]: L1 ON

[H]: L1 OFF

(2) L1 DRIVE1, 2 (DCPS2 → L1)

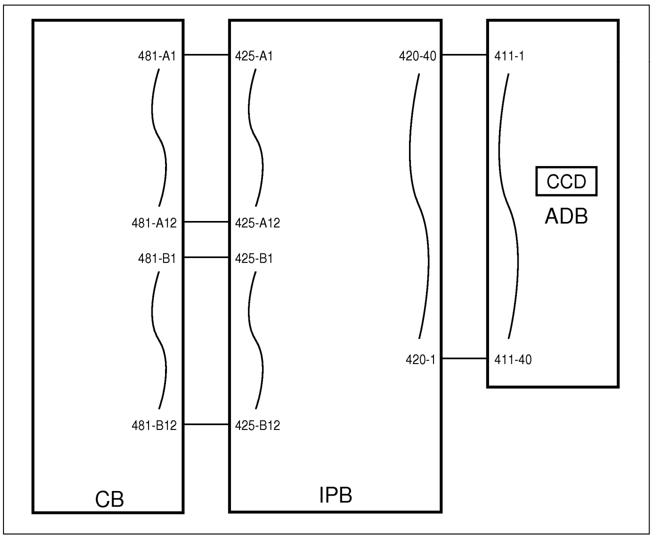
L1 drive signal

(3) RL1 DRIVE (CB → DCPS2 → RL1)

This signal controls RL1.

This signal becomes [H] and turns off RL1 if an abnormality occurs in the machine.

[6] Original Read Control


481-A1
425-A1
420-40
411-1
CCD
ADB
481-A12
425-A12
481-B1
425-B1
420-1
411-40
481-B12
425-B12
CB
IPB

The original is read by the ADB (A/D converter board) and the CCD sensor installed on the ADB.

1. Operation

The light reflected off the exposed original passes through a lens to the CCD sensor. The analog voltages that correspond to the input light intensity are A/D-converted in the ADB, and output to the IPB (image processing board).

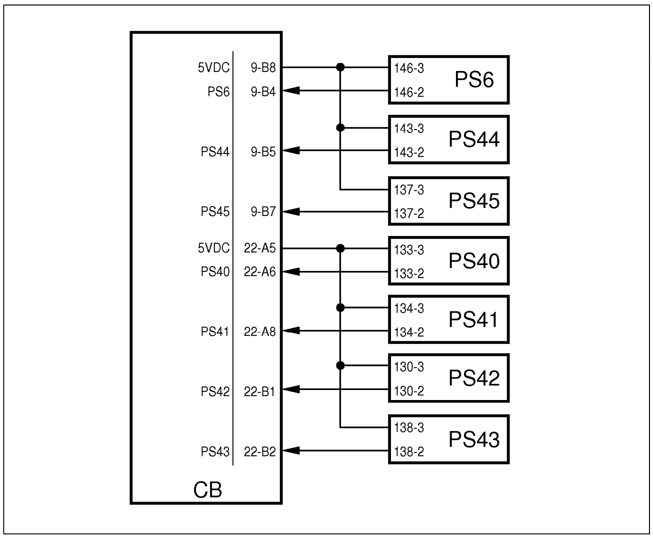
a. Original read operation

The original read timing is as follows.

(1) During a platen copy operation
When PS4 (paper feed restart) goes ON.

(2) During an ADF copy operation
When the exposure unit is +2 mm toward the paper feed side from the position at which PS4 goes ON.

[7] APS Control

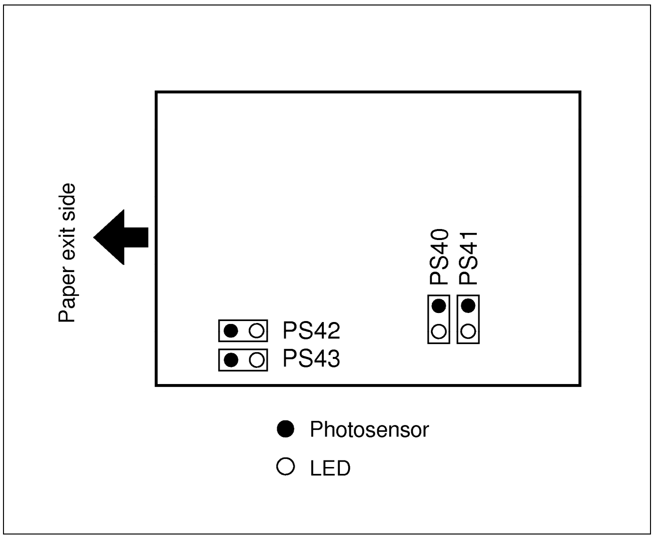

5VDC 9-B8
PS6 9-B4
PS44 9-B5
PS45 9-B7
5VDC 22-A5
PS40 22-A6
PS41 22-A8
PS42 22-B1
PS43 22-B2
CB
146-3
146-2
PS6
143-3
143-2
PS44
137-3
137-2
PS45
133-3
133-2
PS40
134-3
134-2
PS41
130-3
130-2
PS42
138-3
138-2
PS43

APS takes place as a result of the signal read by the APS sensor being sent to the CB (control board) when the original cover is opened and closed.
Related signals are PS45 (APS timing 1) and PS44 (book detection).

1. Operation

a. APS detection operation

APS detection is an operation that detects the paper size according to the particular ON/OFF combination of PS40 (APS (short)), PS41 (long)), PS42 (APS (inner)) and PS43 (APS (outer)).
The APS sensor consists of LEDs and photosensors. APS detection takes place as a result of the light emitted from each LED being reflected off the original and received by the photosensor.


Paper exit side
PS40
PS41
PS42
PS43
● Photosensor
○ LED

The relation between each sensor and the paper size is shown below.

APS sensor / Paper size	C PS40	C PS41	C PS42	C PS43
A3	ON	ON	ON	ON
B4	ON	ON	ON	OFF
A4R	ON	OFF	OFF	OFF
B5R	OFF	OFF	OFF	OFF
A4	OFF	OFF	ON	ON
B5	OFF	OFF	ON	OFF

b. APS detection timing

APS detection takes place when PS45 goes ON or PS44 goes OFF.

APS detection stops when PS45 goes OFF or PS44 goes ON.

2. Signals

a. Input signals

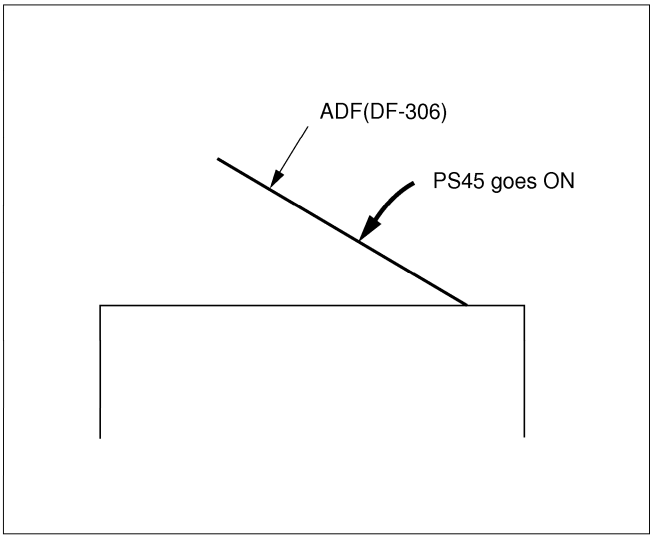
(1) PS40 (PS40 → CB)
Paper size detection signal
[L]: Paper is detected.
[H]: Paper is not detected.

(2) PS41 (PS41 → CB)
Paper size detection signal
[L]: Paper is detected.
[H]: Paper is not detected.

(3) PS42 (PS42 → CB)
Paper size detection signal
[L]: Paper is detected.
[H]: Paper is not detected.

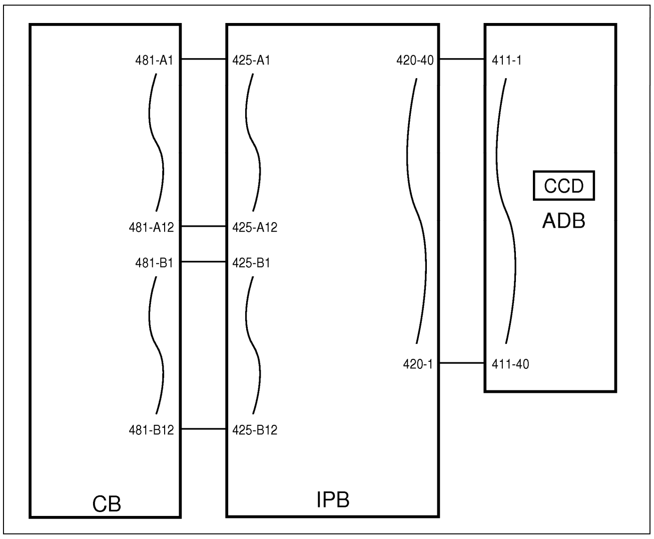
(4) PS43 (PS43 → CB)
Paper size detection signal
[L]: Paper is detected.
[H]: Paper is not detected.

(5) PS45 (PS45 → CB)
Original cover opening/closing detection signal
Activates or deactivates the APS function.
[L]: ON (APS function activated)
[H]: OFF (APS function deactivated)



(6) PS44 (PS44 → CB)
Original cover state detection signal
This signal is used to detect the raised state of the rear part of the original cover when a book or other thick original is being copied.
When the rear part of the original cover is in a raised state, PS44 is OFF, and [H] is output.
[L]: ON (APS function deactivated)
[H]: OFF (APS function activated)

[8] EE Control


481-A1
425-A1
420-40
411-1
CCD
ADB
481-A12
425-A12
481-B1
425-B1
420-1
411-40
481-B12
425-B12
CB
IPB

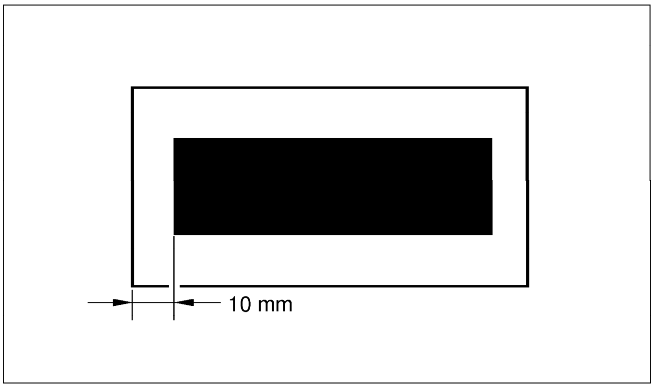
EE control takes place during an EE scan as a result of the CCD sensor reading the original density and selecting the most suitable copy γ correction curve.
EE processing is done by the IPB (image processing board).

1. Operation

a. EE detection operation

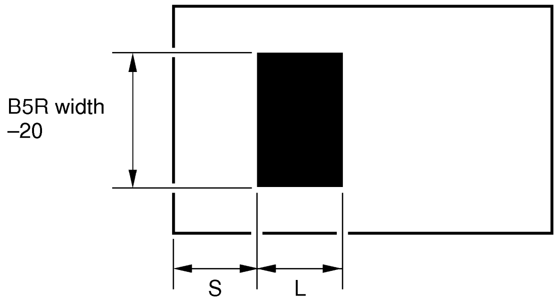
(1) During a platen copy operation
When the Copy button is pressed, an EE scan takes place, and the density is measured over the range shown below.

<EE sampling range>
With APS detection: (Document width–20) × (Document length–20)
Without APS detection: (B5R width–20) × (B5R width–20)



(2) ADF mode (1-1)
The read operation takes place from the point at which PS2 (ADF-EE) goes ON during the return scan of the exposure unit, either while the original is being conveyed through the ADF or after the original has been placed in it.

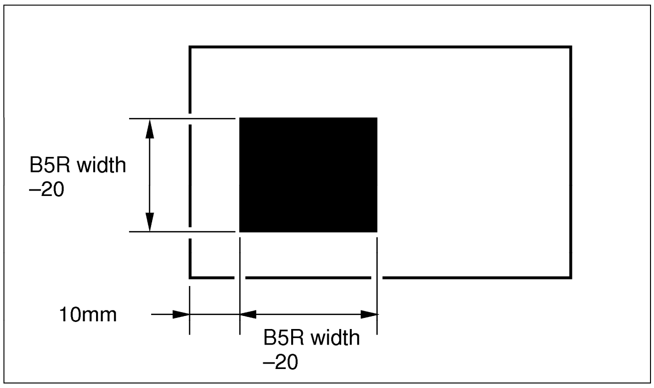
<EE sampling range>(B5R width–20) × L


B5R width
–20
S
L

L: Document travelling distance while the exposure unit moves between PS2 sensor and PS5/PS7 sensors in back-scan operation.
S: Scan-start position varies with magnification ratio.

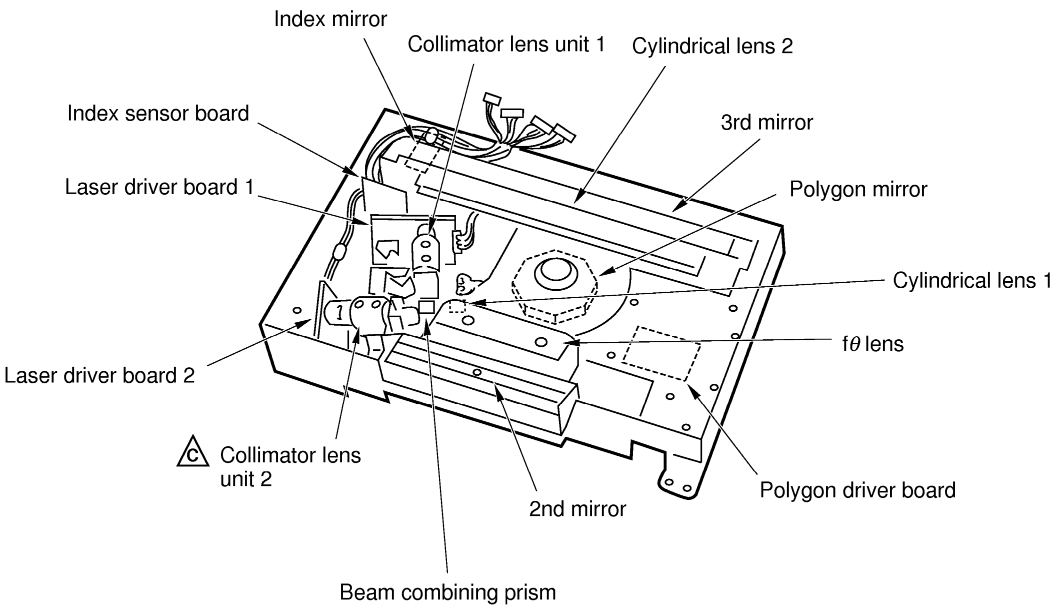
(3) ADF mode (1-2, 2-1, 2-2)
The density of the original is read during the EE scan after the original has been placed in the ADF.

<EE sampling range>(B5R width–20) × (B5R width–20)


B5R width
–20
10mm
B5R width
–20

WRITE UNIT

[1] Composition

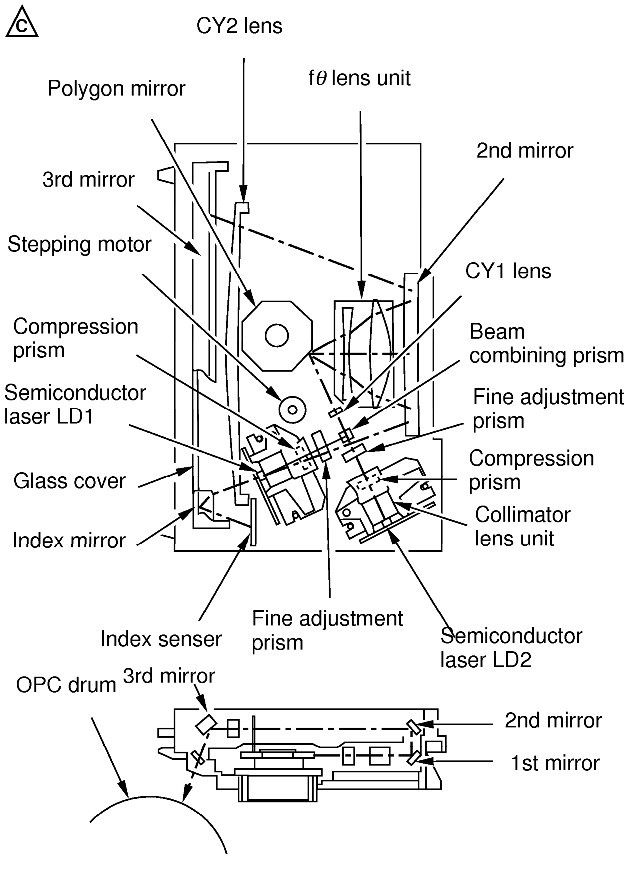

Index mirror
Collimator lens unit 1
Cylindrical lens 2
Index sensor board
3rd mirror
Laser driver board 1
Polygon mirror
Cylindrical lens 1
fθ lens
Laser driver board 2
Collimator lens unit 2
2nd mirror
Polygon driver board
Beam combining prism

[2] Mechanisms

	Mechanism	Method
*1	Scan	Polygon mirror (Rotational speed: 16535 rpm)
	Light source	Laser diodes (two) (Output: Max 15 mW)
*2	Positioning	Index sensor fine adjustment prism
*3	Laser beam combining	Beam combining prism

***1: Path of laser beam**

The light output to each semiconductor is sent to the OPC drum via the collimator lens, compression prism, fine adjustment prism, beam combining prism, cylindrical lens 1, polygon mirror, fθ lens, 1st mirror, 2nd mirror, cylindrical lens 2, and the 3rd mirror.

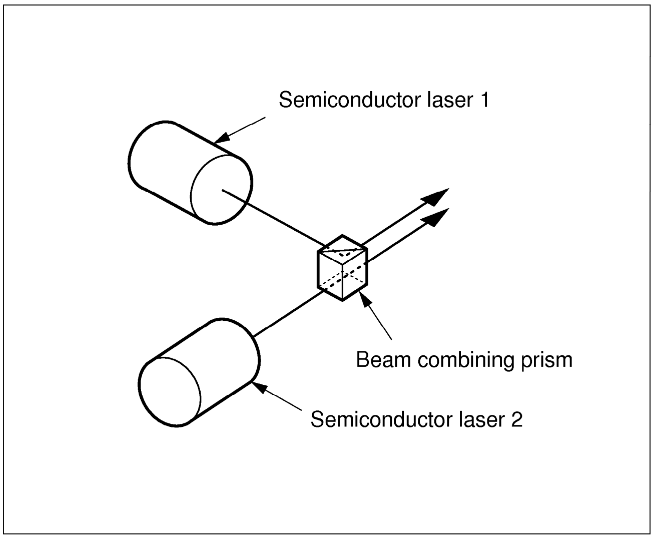

CY2 lens
Polygon mirror
fθ lens unit
2nd mirror
3rd mirror
Stepping motor
CY1 lens
Compression prism
Beam combining prism
Semiconductor laser LD1
Fine adjustment prism
Compression prism
Glass cover
Collimator lens unit
Index mirror
Index senser
Fine adjustment prism
Semiconductor laser LD2
OPC drum
3rd mirror
2nd mirror
1st mirror

***2: Positioning**

Each laser beam is positioned by the compression prism and the fine adjustment prism.
This is adjustable not in field,but only in factory.

***3: Combining the laser beams**

The two laser beams are output at right angles with respect to each other. The beam combining prism causes them to be output in the same direction.


Semiconductor laser 1
Beam combining prism
Semiconductor laser 2

[3] Disassembly and Re-assembly

1. Removing and Re-installing the Write Unit

⚠ **Caution: Be sure that the power cord has been unplugged from the power outlet.**

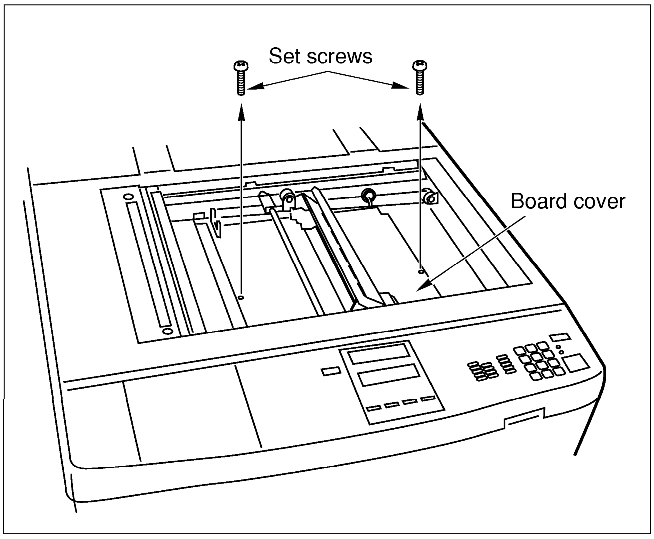
⚠ **Warning:**

(1) Do not energize the write unit when it is not in the correct position.

(2) Do not remove the cover from the write unit other than to clean the polygon mirror.
If the laser beam gets into your eyes, you may lose your sight.

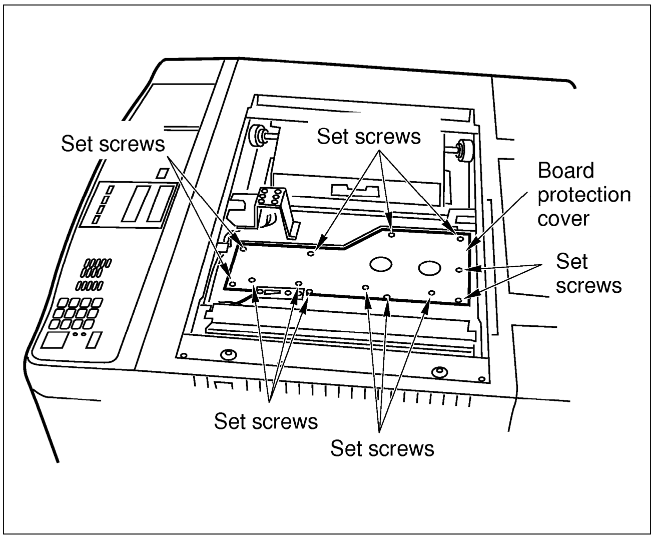
a. Procedure

(1) Remove the glass holder plate, original stopper plate and platen glass.


Set screws
Board cover

(2) Remove the two set screws, then remove the board cover.

(3) Remove the 13 set screws, then remove the board protection cover.


Set screws
Set screws
Board protection cover
Set screws
Set screws
Set screws

(4) Disconnect the four connectors (CN421, 422, 423 and 424) from the image processing board (IPB).

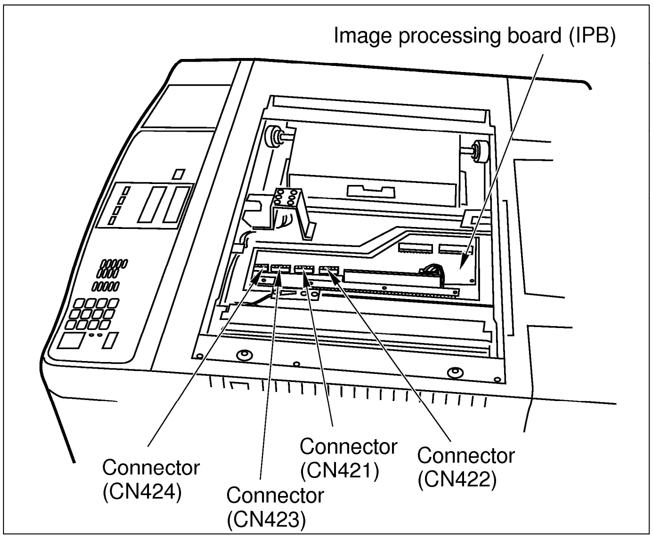
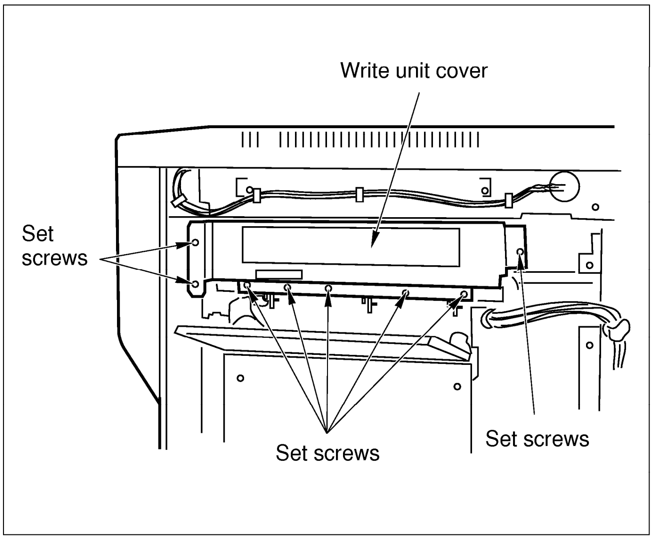


Image processing board (IPB)
Connector (CN424)
Connector (CN423)
Connector (CN421)
Connector (CN422)

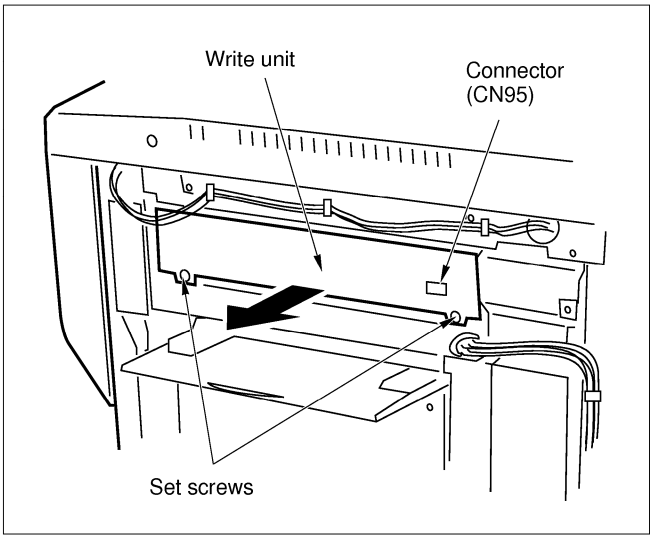
(5) Slacken the four set screws, then remove the upper cover on the right side.

(6) Remove the eight set screws, then remove the write unit cover.


Write unit cover
Set screws
Set screws
Set screws

(7) Disconnect the connector (CN95).

(8) Slacken the two set screws, then pull out the write unit.


Write unit
Connector (CN95)
Set screws

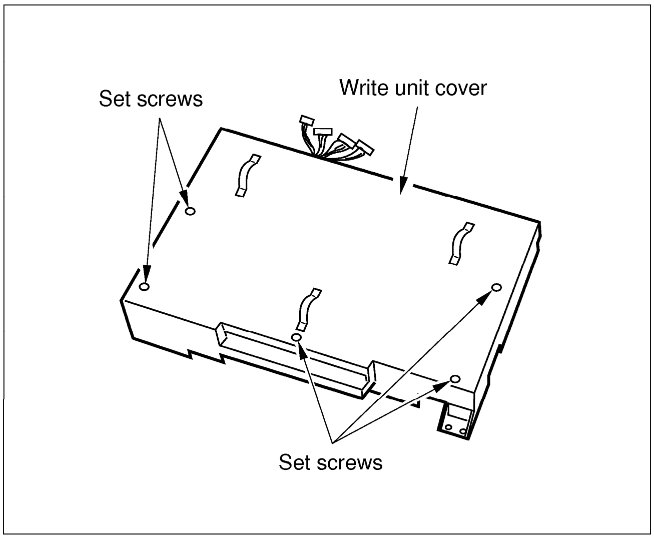
(9) Re-install the write unit in the opposite sequence to removal.

2. Cleaning the polygon mirror

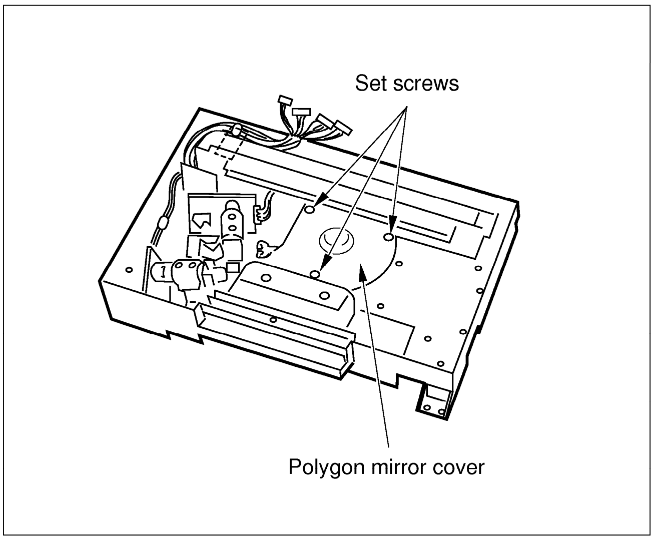
a. Procedure

(1) Remove the write unit.

(2) Remove the five set screws, then remove the write unit cover.


Set screws
Write unit cover
Set screws

(3) Remove the three set screws, then remove the polygon mirror cover.


Set screws
Polygon mirror cover

(4) Immerse a cotton stick in a 1:1 mixture of iso-propyl alcohol and acetone, then use it to clean the eight faces of the polygon mirror.

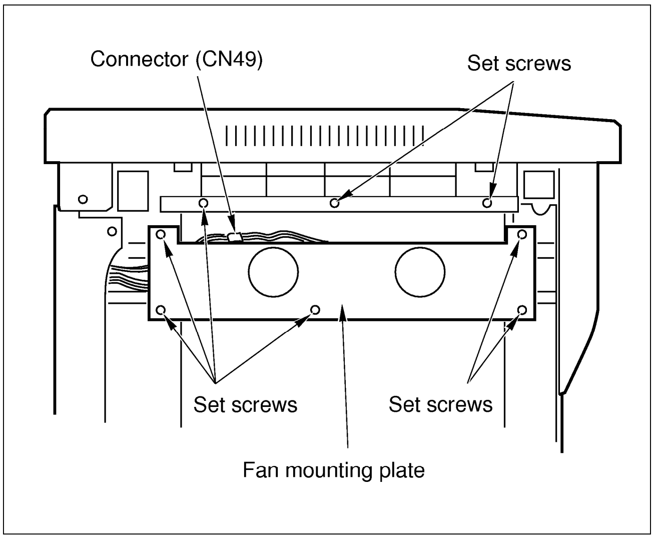
Caution: Take care not to scratch the polygon mirror when cleaning it.

3. Removing and Re-installing the Electronic RDH

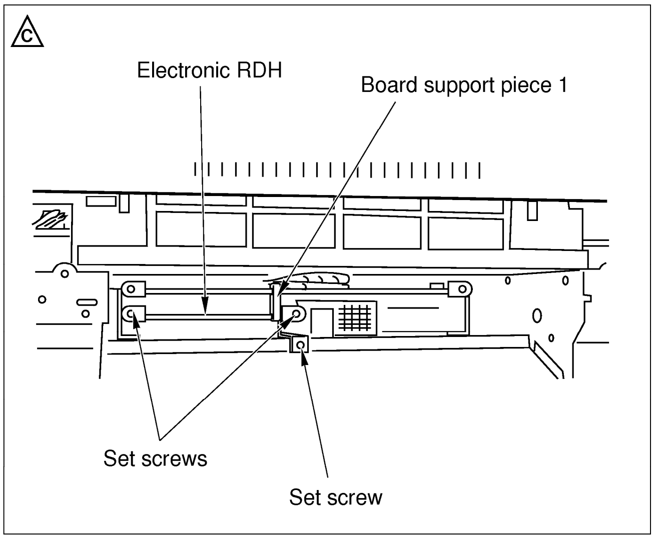
⚠ Caution: Be sure that the power cord has been unplugged from the power outlet.

a. Procedure

(1) Remove the top cover on the left side.
(2) Disconnect the connector (CN49).
(3) Remove the eight set screws, then remove the fan mounting plate.

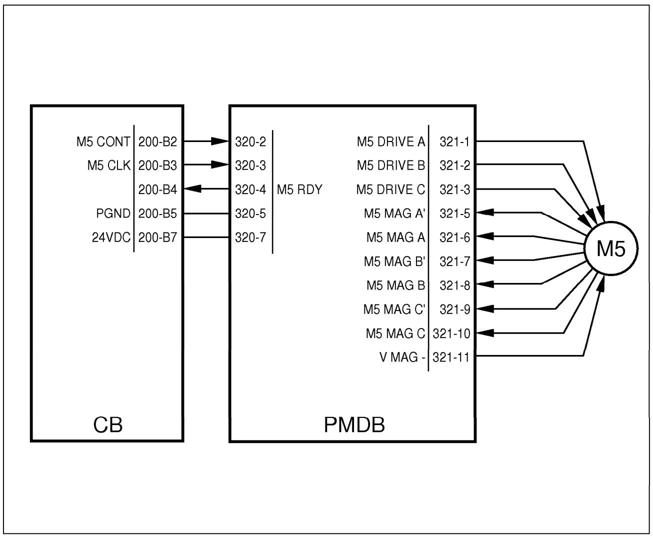

Connector (CN49)
Set screws
Set screws
Set screws
Fan mounting plate

(4) Remove the set screw, then remove board support piece 1.
(5) Remove the two set screws, then pull out and remove the electronic RDH.


C
Electronic RDH
Board support piece 1
Set screws
Set screw

(6) Re-install the electronic RDH in the opposite sequence to removal.

[4] M5 (polygon) Control


M5 CONT
M5 CLK
PGND
24VDC
200-B2
200-B3
200-B4
200-B5
200-B7
320-2
320-3
320-4
320-5
320-7
M5 RDY
M5 DRIVE A
M5 DRIVE B
M5 DRIVE C
M5 MAG A'
M5 MAG A
M5 MAG B'
M5 MAG B
M5 MAG C'
M5 MAG C
V MAG -
321-1
321-2
321-3
321-5
321-6
321-7
321-8
321-9
321-10
321-11
M5
CB
PMDB

M5 (polygon) is driven by the PMDB (polygon driver board), and is controlled by the CB (control board).

1. Operation

a. M5 is a 3-phase brushless DC motor which is driven using a 3-phase bipolar method. The current flowing through the windings is switched according to the position of the rotor which is detected by a sensor (magnetic sensor) inside the motor.
This motor rotates the polygon mirror, causing the laser beams from LDB1 and 2 (laser diode boards 1 and 2) to be scanned in the axial direction of the drum. The speed of the motor is maintained constant by PLL control.

b. M5 is powered by 24 VDC. The rotational speed is as follows.

State of the machine	Rotational speed
During copy	High speed (16,535 rpm)
During idling	One of the following four speeds can be selected using the "25" mode. • 14,000 rpm * • 11,024 rpm * • 8,000 rpm * • Stop *

* If the item marked * is selected, the rotational speed of M5 switches over after the lapse of the specified time from the end of the copy process. The specified time can be selected using the "25" mode among below.
(15 sec, 30 sec, 60 sec, 120 sec)

2. Signals

a. CB output signals

(1) M5 CONT (CB → PMDB)
This signal controls the ON/OFF state of M5.
L: M5 ON
H: M5 OFF

(2) M5 CLK (CB → PMDB)
This is a reference clock signal for PLL-controlling M5 in the PMDB.

b. CB input signal

(1) M5 RDY (PMDB → CB)
This signal indicates the rotation condition of M5.
L: Specified rotational speed
H: If the specified speed has not been reached

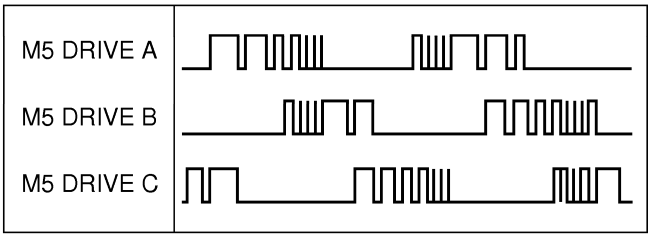
c. PMDB input signal

(1) M5 MAG A/A' (M5 → PMDB)
(1) M5 MAG B/B' (M5 → PMDB)
(1) M5 MAG C/C' (M5 → PMDB)
These are output signals from the position sensors (magnetic sensors) contained in M5. The PMDB detects the position of the rotor of the motor by means of these signals, and switches over the M12 DRIVE A to C output.

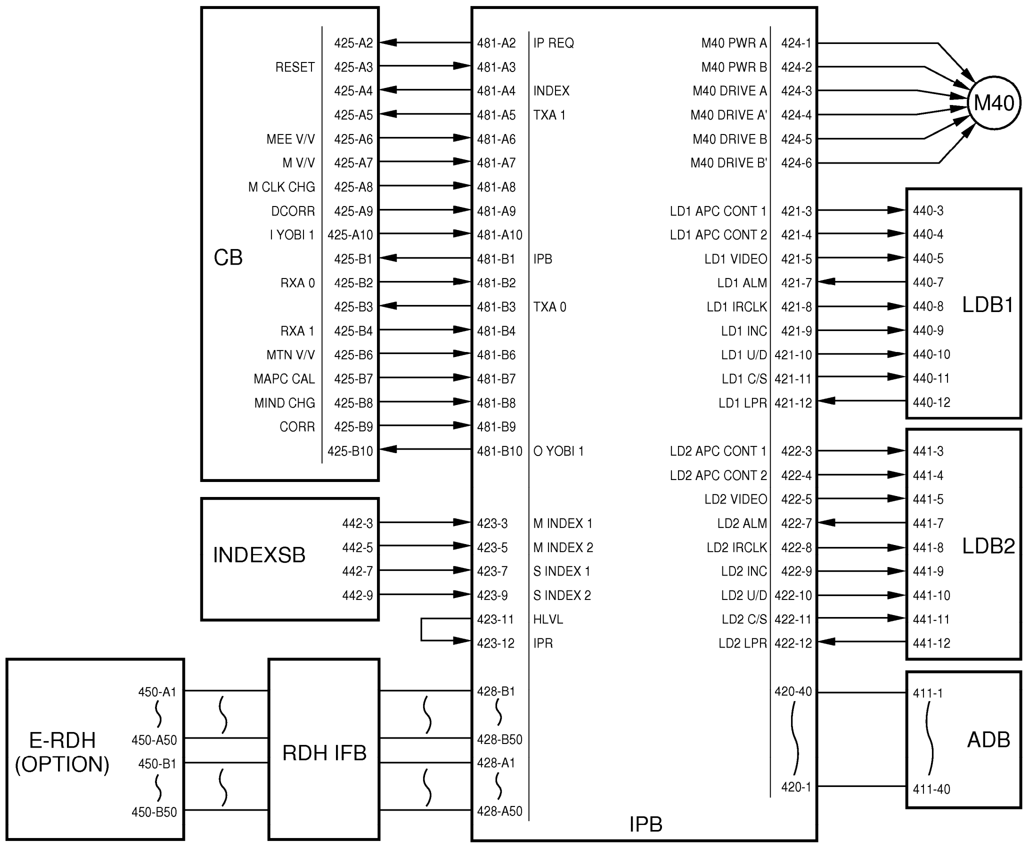
d. PMDB output signal

(1) VMAG- (PMDB → M5)
GND line to the rotor position sensors (magnetic sensors) contained in M5

(2) M5 DRIVE A to C (PMDB → M5)
This is the drive output signal for M5. While M5 is rotating, voltages are output sequentially from M12 DRIVE A to C, and applied to M5.
The voltage from each output that is applied to M5 consists of the pulses shown below. The pulse width of this output changes according to the rotation condition of M5, as shown in the figure, and as a result the RMS value of the voltage applied to M5 changes, causing the speed to be regulated.


M5 DRIVE A
M5 DRIVE B
M5 DRIVE C

[5] Image Write Control


CB
RESET
MEE V/V
M V/V
M CLK CHG
DCORR
I YOBI 1
RXA 0
RXA 1
MTN V/V
MAPC CAL
MIND CHG
CORR
425-A2
425-A3
425-A4
425-A5
425-A6
425-A7
425-A8
425-A9
425-A10
425-B1
425-B2
425-B3
425-B4
425-B6
425-B7
425-B8
425-B9
425-B10
INDEXSB
442-3
442-5
442-7
442-9
E-RDH
(OPTION)
450-A1
450-A50
450-B1
450-B50
RDH IFB
IPB
481-A2
481-A3
481-A4
481-A5
481-A6
481-A7
481-A8
481-A9
481-A10
481-B1
481-B2
481-B3
481-B4
481-B6
481-B7
481-B8
481-B9
481-B10
423-3
423-5
423-7
423-9
423-11
423-12
428-B1
428-B50
428-A1
428-A50
IP REQ
INDEX
TXA 1
IPB
TXA 0
O YOBI 1
M INDEX 1
M INDEX 2
S INDEX 1
S INDEX 2
HLVL
IPR
M40 PWR A
M40 PWR B
M40 DRIVE A
M40 DRIVE A'
M40 DRIVE B
M40 DRIVE B'
LD1 APC CONT 1
LD1 APC CONT 2
LD1 VIDEO
LD1 ALM
LD1 IRCLK
LD1 INC
LD1 U/D
LD1 C/S
LD1 LPR
LD2 APC CONT 1
LD2 APC CONT 2
LD2 VIDEO
LD2 ALM
LD2 IRCLK
LD2 INC
LD2 U/D
LD2 C/S
LD2 LPR
424-1
424-2
424-3
424-4
424-5
424-6
421-3
421-4
421-5
421-7
421-8
421-9
421-10
421-11
421-12
422-3
422-4
422-5
422-7
422-8
422-9
422-10
422-11
422-12
420-40
420-1
M40
LDB1
440-3
440-4
440-5
440-7
440-8
440-9
440-10
440-11
440-12
LDB2
441-3
441-4
441-5
441-7
441-8
441-9
441-10
441-11
441-12
ADB
411-1
411-40

The analog image data from the CCD sensor is A/D-converted by the ADB (A/D converter board), then sent to the IPB (image processing board) where it is data-processed. The processed image data is converted into laser beam and applied to the drum with the control signals from the CB. There are two lasers which are used to write two lines of image data in a single scan. The write start position of each laser is detected by the INDXSB (index sensor board). The E-RDH (electronic RDH) can store digitized image data. Various editing functions can be carried out based on this data.

1. Operation

a. Image processing

The following processing is done by the IPB (image processing board).

(1) Shading correction

<Implementation timing>

- a) White correction
  - * When the machine is switched ON
  - * When the front door or the side door is opened and closed
  - * Every 1000 copies
- b) Black correction
  - * When the Copy button is pressed

(2) Brightness/density conversion

(3) EE processing

(4) Text/dot pattern judgement

(5) Filtering

(6) Magnification change processing

(7) Copy γ correction

(8) Write density control

The following processing is performed by the E-RDH (electronic RDH processing board).

a) Error diffusion processing

b) Data compression

The write operation takes place under instructions from the CB after the above processing has been completed.

b. Write

The IPB (image processing board) sends image data one pixel at a time to LDB1 and LDB2 in accordance with control signals from the CB (control board).

LDB1 and LDB2 cause the lasers to emit at a time period corresponding to the image data. This laser light is applied to the drum.

(1) APC (automatic adjustment of laser beam intensity)

The CB monitors the laser drive current at fixed intervals, and maintains the light intensity at the correct value.

APC takes place at the following timing.

a) Before Dmax/gradation correction

b) When the Copy button is pressed

c) After each two copies during a continuous copy operation

d) When the front door is opened and closed.

Note: MPC

MPC is the data (00-99 steps)stored in the NVRAM in main body, which determines LD output power to be adjusted later by APC.

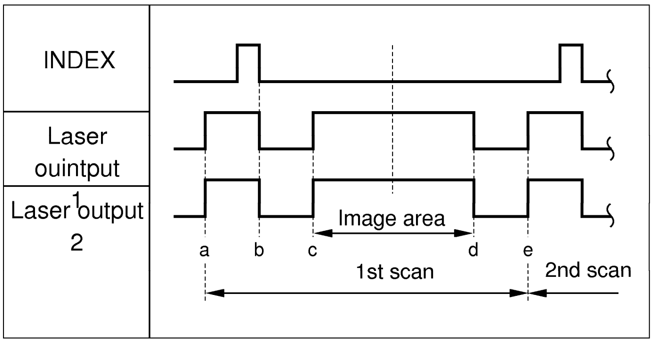
Can be read out by 47-036, 47-037.

MPC value is sent from CB to IPB in case of a) or b) in (1).

(2)Write Timing

a) Axial direction of drum

In this machine, the INDEX signal from INDEXSB determines the laser write start timing for each scan in the axial direction of the drum.



Symbol	Description
a	When laser goes ON during 1st scan
b	When index sensor goes ON
b–c	The timing at left is controlled by counting the LD1 IRCLK and LD2 IRCLK signals. It differs depending upon the paper size.
c–d	
d–e	

b) Direction of rotation of drum

1) When realtime output

1.When superfine mode is selected

2.1st copy in either normal or fine mode with platen mode or RADF(1-1)mode

When PS4 (paper feed restart) goes ON

2) When data is output from the E-RDH memory

When the copy paper reaches the specified position

* In the case of paper feed from the tray, LCT or ADU: After the specified period from when PS18 (no feed) goes ON

* In the case of by-pass paper feed: After the specified period from the start of by-pass paper feed

(3) Laser beam position correction

a) Axial direction of drum

The index sensor detects the deviation of the positions of the 2 beams. This error is corrected by changing the timing of the light emission from the laser.

b) Direction of rotation of drum

The index sensor detects the deviation of the positions of the 2 beams, and M40 (laser correction motor) changes the angle of the fine adjustment prism of laser LD1, thus adjusting the beam in the up-down direction.

2. Signals

a. CB output signals

(1) MEE V/V (CB → IPB)

This signal determines the scanning area in the sub scanning direction during the pre-scanning operation (EE control). The period during which this signal is [L] is judged as the scanning range.

(2) M V/V (CB → IPB)

This signal determines the scanning range in the sub scanning direction during the exposure scan. The period over which this signal is [L] is judged as the scanning range.

(3) M CLK CHG (CB → IPB)

Clock frequency switching signal

[H]: Low clock frequency

[L]: High clock frequency

(4) DCORR (CB → IPB)

Black data collection trigger signal used when shading correction is taking place

(5) I YOBI 1 (CB → IPB)

Spare input port

(6) RXA 0, 1 (CB → IPB)

Data that is transferred serially from the CB to the IPB

(7) MTN V/V (CB → IPB)

This signal determines the patch output range in the sub scanning direction while Dmax is being measured. The period during which this signal is [L] is judged as the patch output range.

(8) MAPC CAL (CB → IPB)
APC and PWM calibration trigger signal

(9) MIND CHG (CB → IPB)
This signal selects the index signal.
[H]: External index signal
[L]: Internal index signal

(10) CORR (CB → IPB)
White data collection trigger used when shading correction is taking place

(11) RESET (CB → IPB)
Processing CPU reset signal (not used)

b. CB input signal

(1) IP REQ (IPB → CB)
Processing board communications enable signal

(2) INDEX (IPB → CB)
Write system index signal

(3) TXA 0, 1 (IPB → CB)
Data that is transferred serially from the IPB to the CB

(4) MPR (IPB → CB)
Image processing board power supply monitoring signal (connector check)

(5) O YOBI 1 (IPB → CB)
Spare output port

c. IPB output signal

(1) M40 PWR A (IPB → M40)
M40 A phase drive signal

(2) M40 PWR B (IPB → M40)
M40 B phase drive signal

(3) M40 DRIVE A/A' (IPB → M40)
M40 A phase drive pulse signal

(4) M40 DRIVE B/B' (IPB → M40)
M40 B phase drive pulse signal

(5) LD1 APC CONT 1, 2 (IPB → LDB1)
APC (laser light intensity automatic adjustment) of LD1 takes place according to the combination of these two signals.

(6) LD1 C/S (IPB → LDB1)
LD1 MPC signal

(7) LD1 VIDEO (IPB → LDB1)
LD1 laser image data

(8) LD1 IRCLK (IPB → LDB1)
LD1 APC clock signal

(9) LD1 INC (IPB → LDB1)
LD1 MPC signal

(10) LD1 U/D (IPB → LDB1)
LD1 MPC signal

(11) LD2 APC CONT 1, 2 (IPB → LDB2)
APC (laser light intensity automatic adjustment) of LD2 takes place according to the combination of these two signals.

(12) LD2 C/S (IPB → LDB2)
LD2 MPC signal

(13) LD VIDEO (IPB → LDB2)
LD2 laser image data

(14) LD2 IRCLK (IPB → LDB2)
LD2 APC clock signal

(15) LD2 INC (IPB → LDB2)
LD2 MPC signal

(16) LD2 U/D (IPB → LDB2)
LD2 MPC signal

(17) HLVL (IPB → INDEXSB)
5 VDC for monitoring power supply

d. IPB input signals

(1) LD1 ALM (LDB1 → IPB)
Signal which indicates an abnormality in the laser drive current
[H]: Normal
[L]: Abnormal

(2) LD2 ALM (LDB2 → IPB)
Signal which indicates an abnormality in the laser drive current
[H]: Normal
[L]: Abnormal

(3) M INDEX 1, 2 (INDEXSB → IPB)
Index signal for detection of main scanning skew

(4) S INDEX 1, 2 (INDEXSB → IPB)
Index signal for detection of sub scanning skew

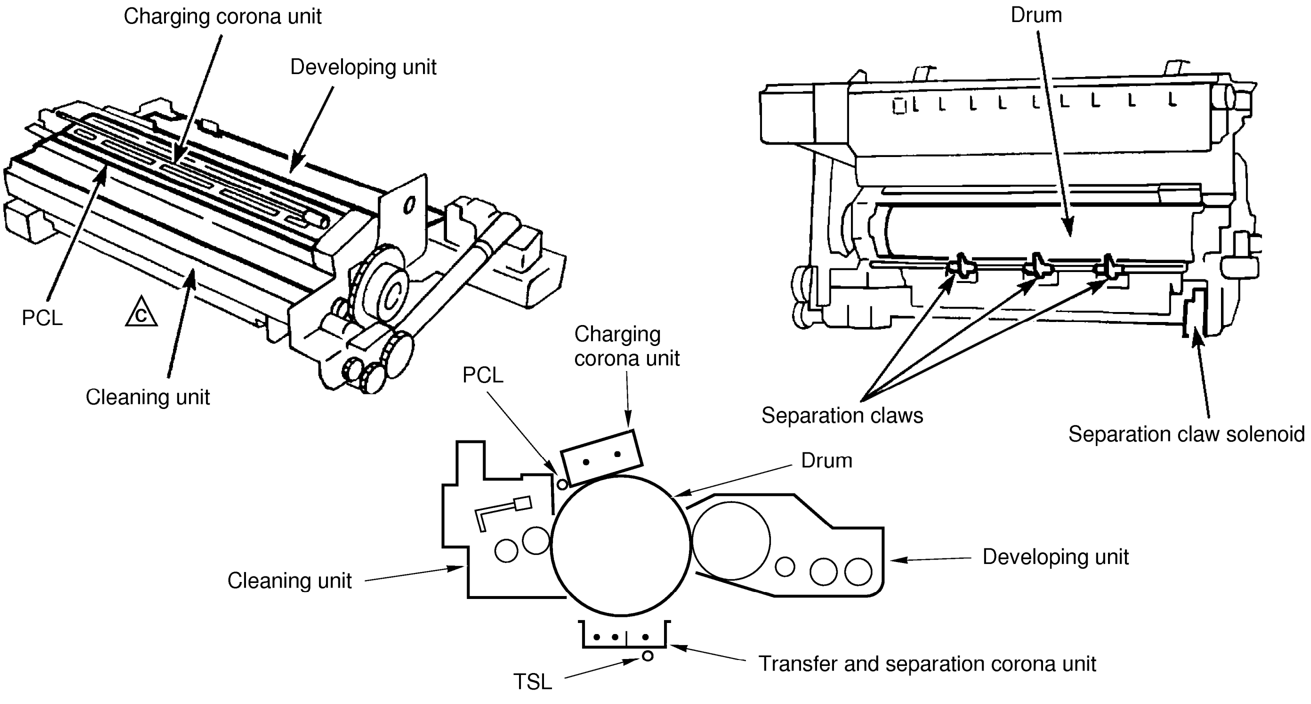
(5) IPR (INDEXSB → IPB)
INDEXSB power supply monitoring signal (connector check)
[H]: Normal
[L]: Abnormal

(6) LD1 LPR (LDB1 → IPB)
LD1 power supply monitoring signal (connector check)
[H]: Normal
[L]: Abnormal

(7) LD2 LPR (LDB2 → IPB)
LD2 power supply monitoring signal (connector check)
[H]: Normal
[L]: Abnormal

DRUM UNIT

[1] Composition


Charging corona unit
Developing unit
PCL
Cleaning unit
Drum
Separation claws
Separation claw solenoid
PCL
Charging corona unit
Drum
Developing unit
Cleaning unit
Transfer and separation corona unit
TSL

[2] Mechanisms

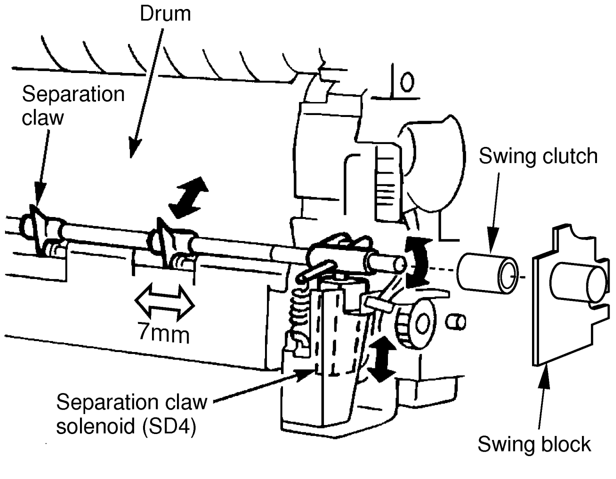
Mechanism	Method
Carriage supply	Fixed rail
PCL	LED
*1 Auxiliary separation	Separation claws

The drum unit of this machine is an integral assembly consisting of the drum, and also the charging corona unit, developing unit, cleaning unit, toner recycle unit and the PCL which are installed around the drum.

***1: Auxiliary separation**

Three separation claws separate the paper from the drum and prevent paper jamming. These claws are pressed against the drum or removed from it by the ON/OFF operation of the separation claw solenoid (SD4).

Also, while the swing clutch installed in the swing block is turning one revolution, the separation claws slide about 7 mm, preventing a specific part of the paper from becoming dirty and also preventing the drum from being scratched.


Drum
Separation claw
Swing clutch
7mm
Separation claw solenoid (SD4)
Swing block

[3] Disassembly and Re-assembly

1. Removing and Re-installing the Drum Unit

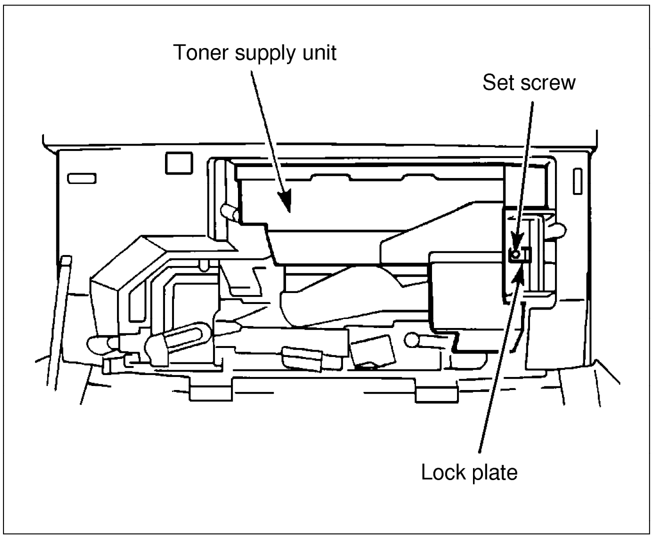
⚠ **Caution: Be sure that the power cord has been unplugged from the power outlet.**

Caution:

1. The drum in this machine is much more sensitive than the drums used in previous machines. Before pulling out the drum unit, therefore, be sure to place the drum cover over it and store the drum carriage in a dark place.
2. Be careful not to rotate the drum when installing or removing the drum unit. if you rotate the drum in the direction opposite to the direction in which it rotates during a copy operation, you risk damaging the cleaning blade.

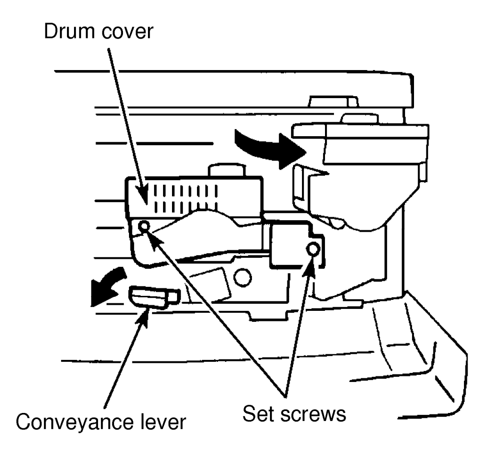
a. Procedure

(1) Open the front door, slacken the set screw, release the lock plate of the toner supply unit, then pull forward the toner supply unit and fix it in place.


Toner supply unit
Set screw
Lock plate

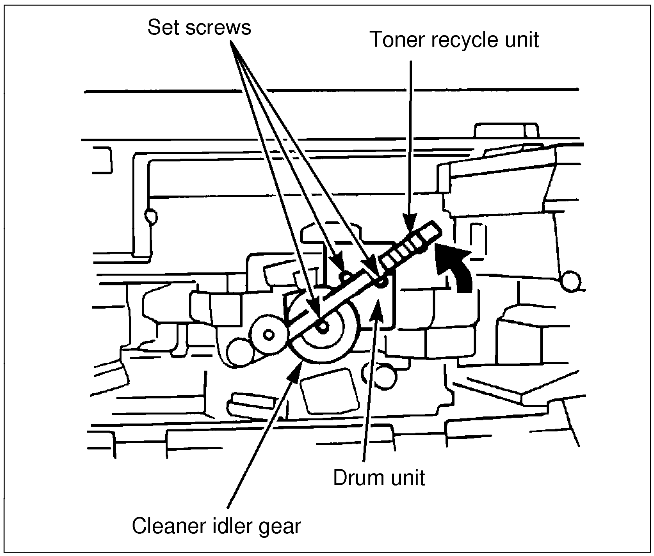
(2) Release the conveyance lever.

(3) Remove the two set screws, then remove the drum cover.


Drum cover
Conveyance lever
Set screws

(4) Remove the three set screws, then slowly pull forward the drum unit. (Raise the toner recycle unit then remove the set screw at the center of the drum.)

Caution: There is a possibility of the drum rotating in reverse, so retain the cleaner idler gear to prevent the drum from rotating.


Set screws
Toner recycle unit
Drum unit
Cleaner idler gear

(5) Re-install the drum carriage in the opposite sequence to removal.

2. Removing and Re-installing the Drum

Caution:

1. Be careful not to touch the drum or the cleaning blade with bare hands, or damage these parts.
2. When leaving the drum to stand, be sure to place the drum cover over it and store it in a dark place.
3. When re-installing the drum, cleaning blade and guide roller, apply setting powder to the entire surface of the drum and also to the cleaning blade regardless of whether or not the parts are new or old types. In addition, apply toner to both ends of the cleaning blade.
4. After applying setting powder to the drum, carry out the following work before installing the drum unit on the main body.
   1) To ensure that the toner density is correct, before installing the drum to the drum unit, discharge the surface of γ detection sensor and the Dmax sensor on the control board by using a piece of cloth moistened with alcohol, thus preventing toner from adhering to the sensors.
   2) After installling the drum to the drum unit, with the charging corona unit and the developing unit removed, insert the centering jigs into both sides of the drum, then turn the drum one revolution. This prevents setting powder from scattering onto the charging corona unit, and other parts, and also prevents image defects.
5. Pay attention not to drop the blade spacer which is inserted to cleaning blade axis on the back side.
6. When installing the drum, be careful of the orientation of the drum. The end of the drum with the wider non-image area is the front.
7. When installing a new drum, be sure to enter code 91 of the 47 mode and reset the drum counter. (For details, refer to "Adjustment section".)

a. Procedure

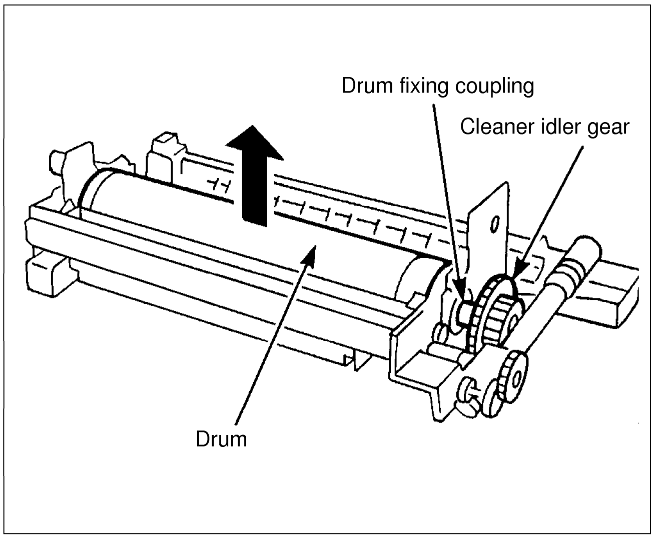
(1) Remove the drum unit from the main body.

(2) Remove the charging corona unit, developing unit and cleaning blade from the drum unit. (For the sequence of removing these parts, refer to "Charging corona unit, Developing unit and cleaning/recycle unit section".)

(3) Remove the cleaner idler gear and the drum fixing coupling.

Note: Before removing the drum, in oder to prevent the toner from dropping, rotate the cleaner idler gear/B counterclockwise and remove the toner remaing between the drum and guide roller.
If tne toner cannot be removed, rotate the drum clockwise a bit, then detach the drum keeping the toner on the place.

(4) Gently lift out the drum while holding it at both ends to ensure that you do not damage the photosensitive surface.



(5) Re-install the drum in the opposite sequence to removal.

3. Removing and Re-installing the Separation Claws

Caution:

1. Take care not to damage the drum when removing the separation claws.
2. Be careful of the direction and position of the separation claws when re-installing the claws.
3. Do not touch the cleaning blade or the drum with the bare hands.

a. Procedure

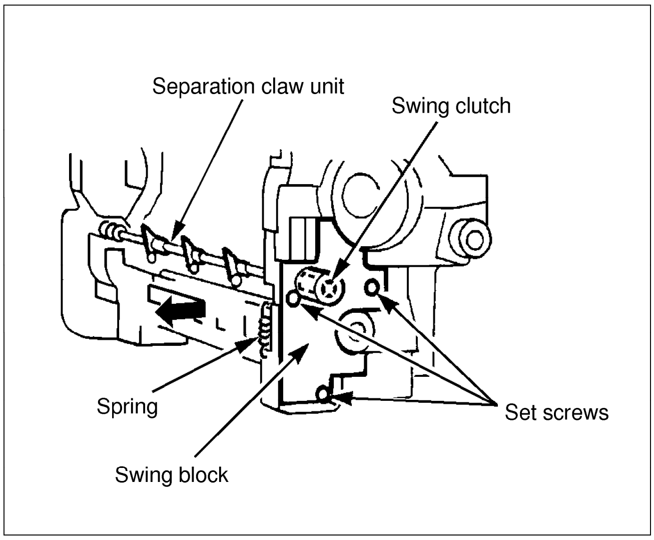
(1) Remove the drum carriage from the main body.

(2) Remove the drum from the drum carriage.

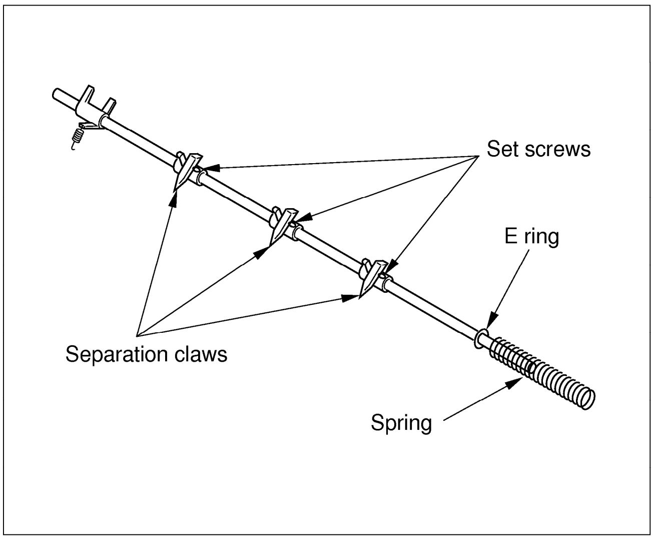
(3) Remove the spring.

(4) Remove the three set screws, then remove the swing block and swing clutch.

(5) Remove the separation claw unit.



(6) Remove the spring and the E ring from the separation claw unit.
(7) Remove the three set screws of the claws (one screw each), then remove the three claws.

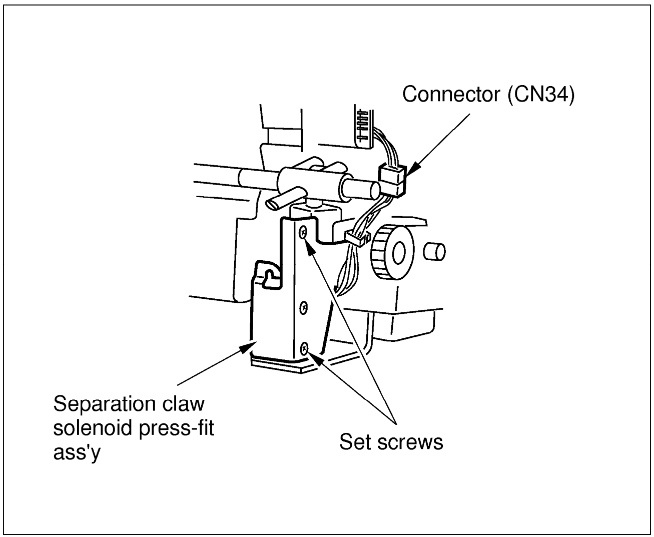

Set screws
E ring
Separation claws
Spring

(8) Re-install the separation claws in the opposite sequence to removal.

4. Removing and Re-installing the Separation Claw Solenoid Press-fit Ass'y

a. Procedure

(1) Remove the drum unit from the main body.
(2) Remove the drum and separation claw unit from the drum unit.
(3) Disconnect the connector (CN34).
(4) Remove the two set screws, then remove the separation claw solenoid press-fit ass'y.

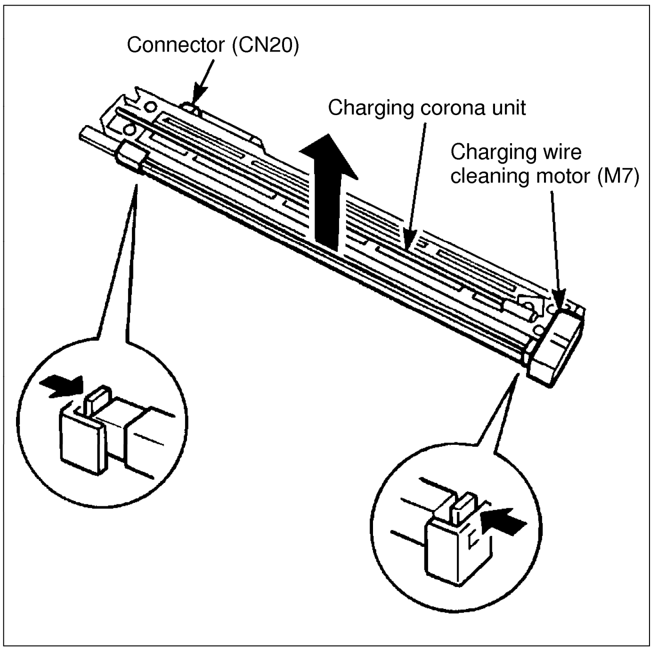

Connector (CN34)
Separation claw solenoid press-fit ass'y
Set screws

(5) Re-install the press-fit ass'y in the opposite sequence to removal.

5. Removing and Re-installing the PCL

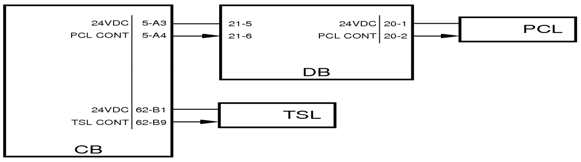
a. Procedure

(1) Remove the charging corona unit. (Refer to "Corona unit section" for the method of removing the PCL.)
(2) Disconnect the connector (CN20) from the drum board.
(3) Press inward the hooks at the front and rear of the PCL cover, and remove the PCL.


Connector (CN20)
Charging corona unit
Charging wire cleaning motor (M7)

(4) Re-install the PCL in the opposite sequence to removal.

[4] PCL/TSL Control


24VDC
PCL CONT
5-A3
5-A4
24VDC
TSL CONT
62-B1
62-B9
CB
21-5
21-6
24VDC
PCL CONT
20-1
20-2
DB
PCL
TSL

The PCL (precharging exposure lamp) and TSL (transfer sync exposure lamp) consist of LEDs which are controlled by the CB (control board).

1. Operation

The PCL goes ON and OFF in synchronism with M1 (main), and TSL with M4(drum moter).

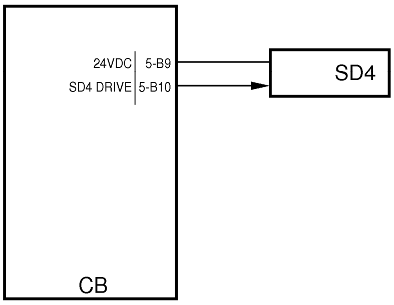
2. Signals

a. Output signals

(1) PCL CONT (CB → DB → PCL)
PCL ON/OFF control signal
[L]: PCL ON
[H]: PCL OFF

(2) TSL CONT (CB → TSL)
TSL ON/OFF control signal
[L]: TSL ON
[H]: TSL OFF

[5] Separation claw control


24VDC
SD4 DRIVE
5-B9
5-B10
CB
SD4

The separation claws are driven by SD4 (separation claws), and are controlled by the CB (control board).

1. Operation

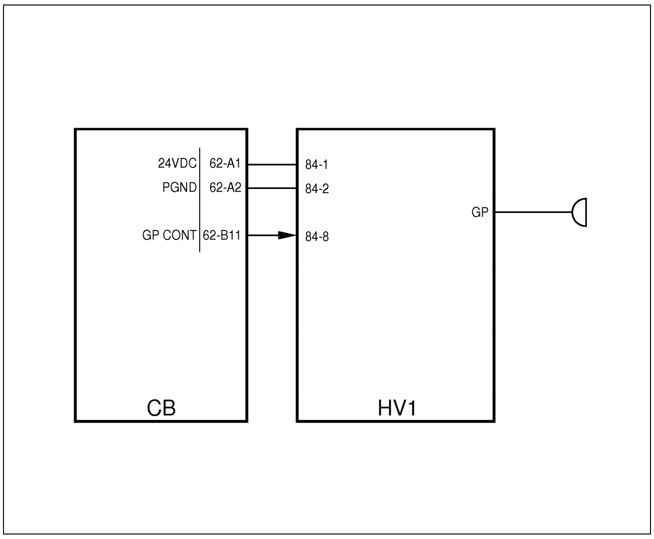
During the separation discharge, SD4 goes ON, causing the separation claws to touch the drum in order to help separate the paper from the drum.

2. Signals

a. Output signal

(1) SD4 DRIVE (CB → SD4)
SD4 drive control signal
[L]: SD4 ON
[H]: SD4 OFF

[6] Paper Guide Plate Control


24VDC
62-A1
PGND
62-A2
GP CONT
62-B11
84-1
84-2
84-8
GP
CB
HV1

A constant voltage is applied to the paper guide plate in order to prevent toner from adhering to it.

1. Operation

a. ON/OFF timing

ON and OFF in synchronism with M4 (drum).

b. Applied voltage

-500 VDC

2. Signal

a. Output signal

(1) GP CONT (CB → HV1)

Controlling ON/OFF of the voltage applied to the paper guide plate

[L]: Voltage applied.

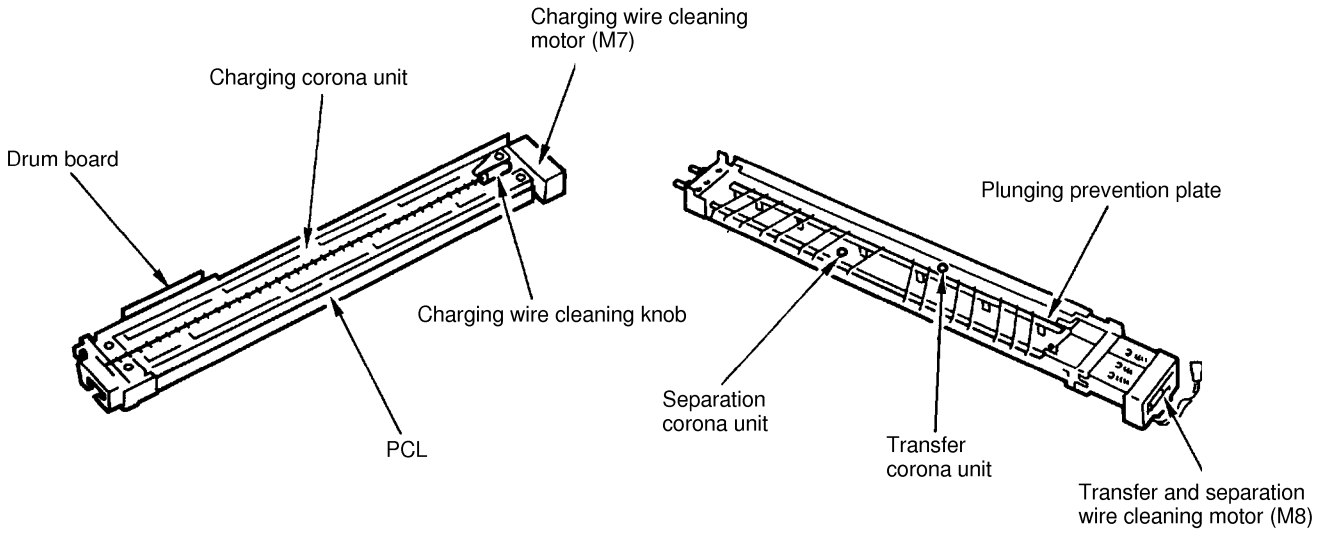
[H]: Voltage not applied.

CORONA UNIT SECTION

[1] Composition

<Charging corona unit>

<Transfer and separation corona unit>

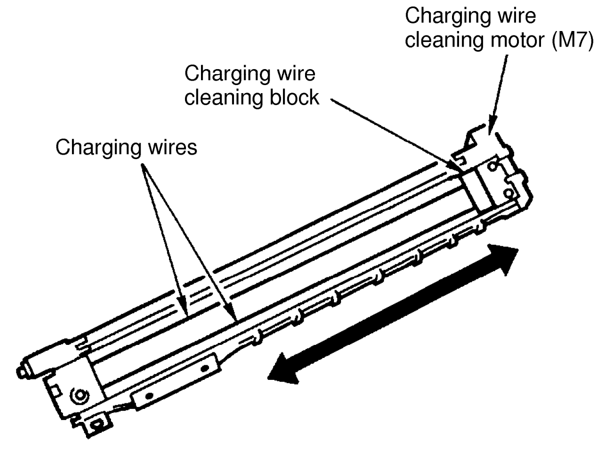

Charging wire cleaning motor (M7)
Charging corona unit
Drum board
Charging wire cleaning knob
PCL
Plunging prevention plate
Separation corona unit
Transfer corona unit
Transfer and separation wire cleaning motor (M8)

[2] Mechanisms

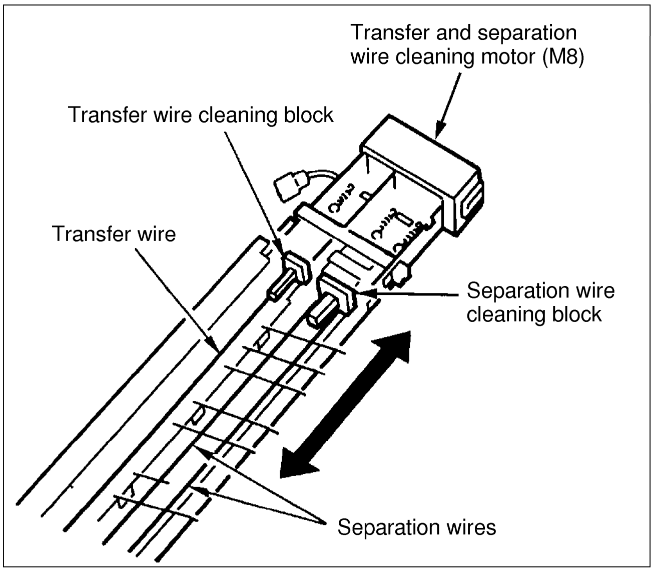
	Mechanism	Method
*1	Charging	Scorotron (DC negative corona discharge) Discharge wire: Tungsten 0.06 mm dia. Grid control: Stainless steel plate With automatically wire cleaner
*2	Transfer	DC negative corona discharge Discharge wires: Tungsten 0.06 mm dia. With automatically wire cleaner
	Separation	AC corona discharge Discharge wires: Tungsten 0.06 mm dia. With automatically wire cleaner

***1: Cleaning the charging corona wires**

The charging corona unit has a wire cleaner. The charging wire cleaning motor causes the charging wire cleaning block to move back and forth, removing dirt from the wires.


Charging wire cleaning motor (M7)
Charging wire cleaning block
Charging wires

***2: Cleaning the transfer and separation wires**
The transfer and separation corona unit has a wire cleaner. The transfer and separation wire cleaning motor causes the transfer and separation wire cleaning blocks to move back and forth, removing dirt from the wires.


Transfer and separation wire cleaning motor (M8)
Transfer wire cleaning block
Transfer wire
Separation wire cleaning block
Separation wires

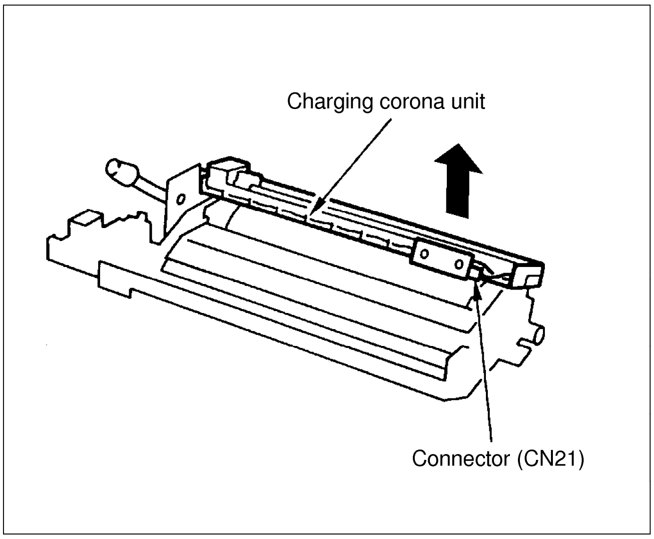
[3] Disassembly and Re-assembly

1. Removing and Re-installing the Charging Corona Unit

⚠ **Caution: Be sure that the power cord has been unplugged from the power outlet.**

a. Procedure

(1) Remove the drum unit from the main body.
(2) Disconnect the connector (CN21).
(3) Lift out the charging corona unit.


Charging corona unit
Connector (CN21)

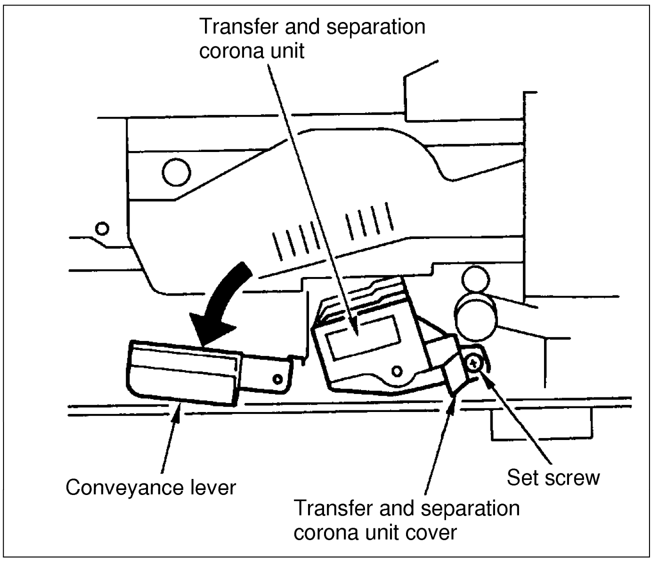
(4) Re-install the charging corona unit in the opposite sequence to removal.

2. Removing and Re-installing the Transfer and Separation Corona Unit

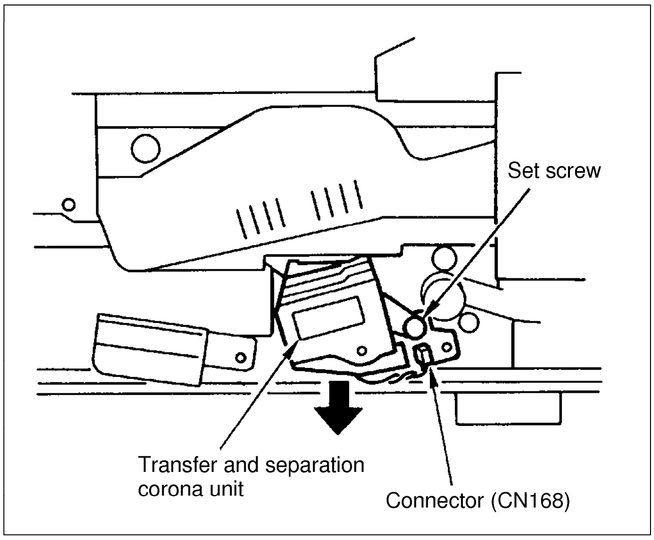
⚠ **Caution: Be sure that the power cord has been unplugged from the power outlet.**

a. Procedure

(1) Open the front door, and release the conveyance lever.
(2) Remove the set screw, then remove the transfer and separation corona unit cover.


Transfer and separation corona unit
Conveyance lever
Set screw
Transfer and separation corona unit cover

(3) Disconnect the connector (CN168).
Ⓒ (4) Remove the set screw, then pull forward and remove the transfer and separation corona unit.


Set screw
Transfer and separation corona unit
Connector (CN168)

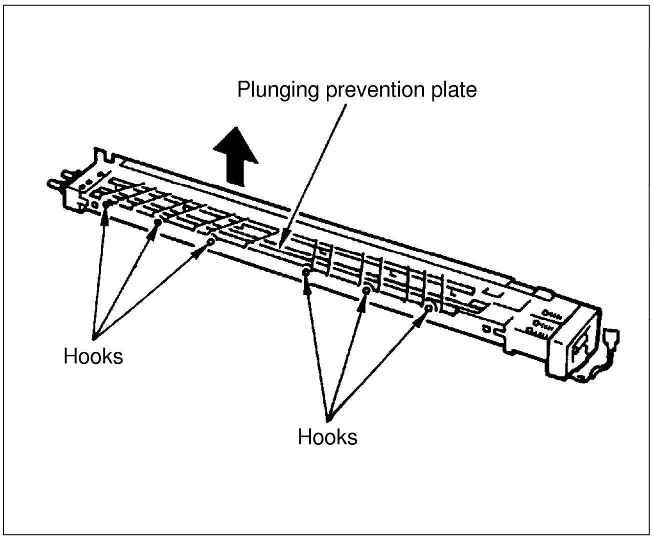
(5) Re-install the transfer and separation corona unit in the opposite sequence to removal.

3. Removing and re-installing the Plunging Prevention Plate

a. Procedure

(1) Remove the transfer and separation corona unit

(2) Push in the six hooks at the rear of the back plate while grasping then with a pair of tweezers, and remove the plunging prevention plate.


Plunging prevention plate
Hooks
Hooks

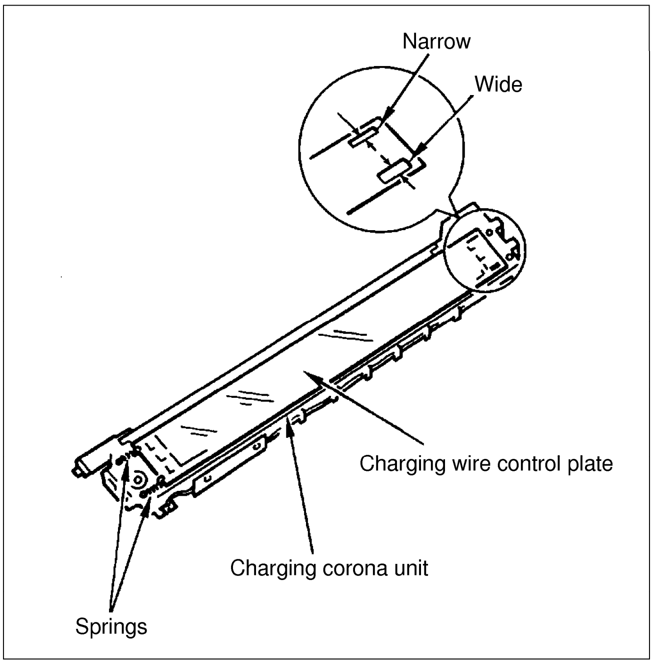
(3) Re-install the plunging prevention plate in the opposite sequence to removal.

4. Cleaning the charging control plate

a. Procedure

(1) Remove the charging corona unit.

(2) Remove the two springs, then slide the charging control plate toward the charging wire cleaning motor and remove it.


Narrow
Wide
Charging wire control plate
Charging corona unit
Springs

(3) Remove dirt from the charging control plate by gently dabbing it with a piece of cloth moistened with drum cleaner, then remove any remaining dirt with a blower brush.

(4) Re-install the charging control plate in the opposite sequence to removal.

5. Replacing Charging Wire Cleaning Block B

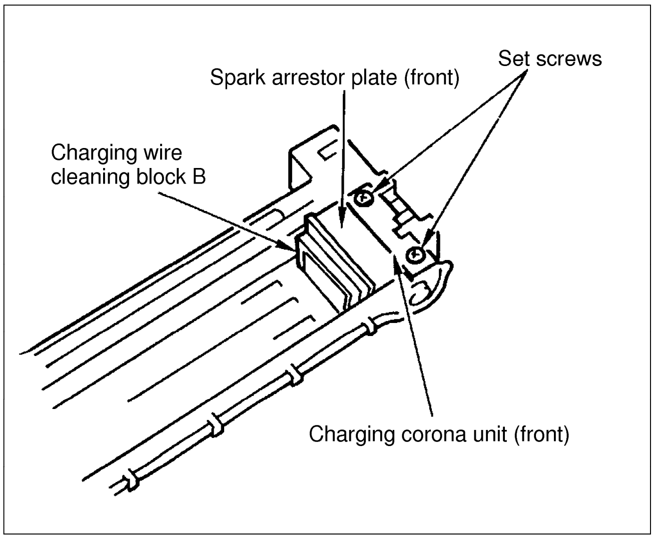
a. Procedure

(1) Remove the charging corona unit.

(2) Remove the charging control plate.

(3) Remove the two set screws of the charging corona unit (front).

(4) Lift out and remove charging wire cleaning block B together with the spark arrestor plate (front).

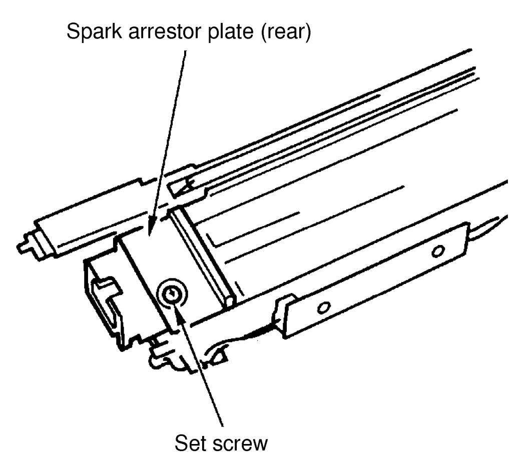

Set screws
Spark arrestor plate (front)
Charging wire cleaning block B
Charging corona unit (front)

(5) Re-install charging wire cleaning block B in the opposite sequence to removal.

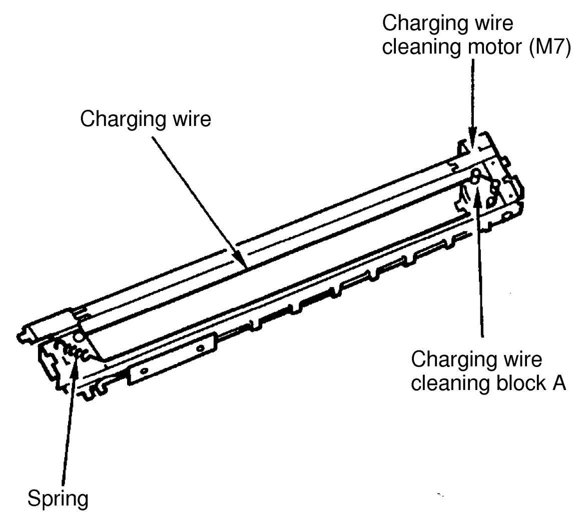
6. Replacing the Charging Wire

a. Procedure

(1) Remove the charging corona unit.
(2) Remove the charging control plate.
(3) Remove the charging wire cleaning block B
(4) Remove the set screw, then remove the spark arrestor plate (rear).


Spark arrestor plate (rear)
Set screw

(5) Remove the spring, then remove the charging wires.

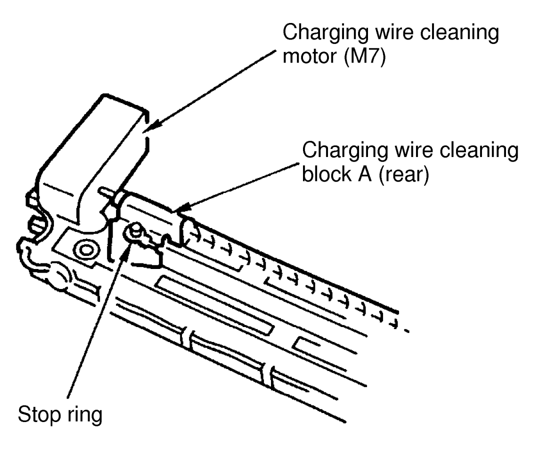

Charging wire cleaning motor (M7)
Charging wire
Charging wire cleaning block A
Spring

(6) Re-install the charging wires in the opposite sequence to removal.

7. Replacing Charging Wire Block A

a. Procedure

(1) Remove the charging corona unit.
(2) Remove the charging control plate.
(3) Remove the charging wire cleaning block B.
(4) Remove the charging wires.
(5) Turn the charging corona unit upside down, then remove the stop ring, and remove the charging wire cleaning block A.

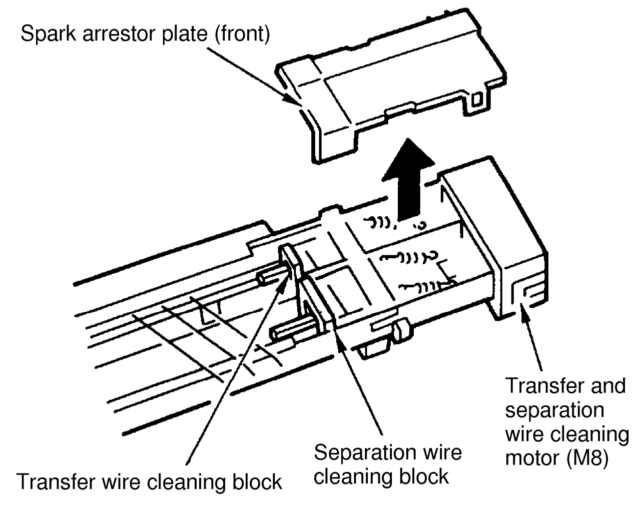

Charging wire cleaning motor (M7)
Charging wire cleaning block A (rear)
Stop ring

(6) Re-install charging wire cleaning block A in the opposite sequence to removal.

8. Replacing the Transfer and Separation Wire Cleaning Blocks

a. Procedure

(1) Remove the transfer and separation corona unit.
(2) Remove the spark arrestor plate (front).
(3) Lift out and remove the the transfer wire cleaning block and separation wire cleaning block.

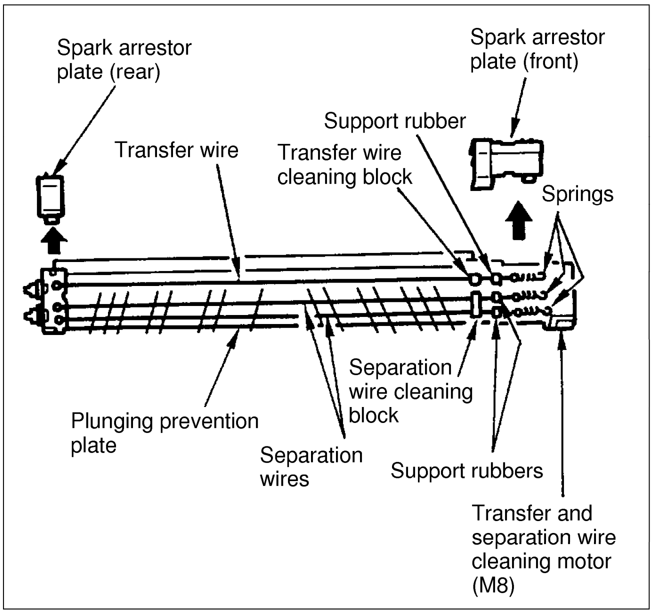

Spark arrestor plate (front)
Transfer and separation wire cleaning motor (M8)
Separation wire cleaning block
Transfer wire cleaning block

(4) Re-install the transfer and separation wire cleaning blocks in the opposite sequence to removal.

9. Replacing the Transfer and Separation Wires

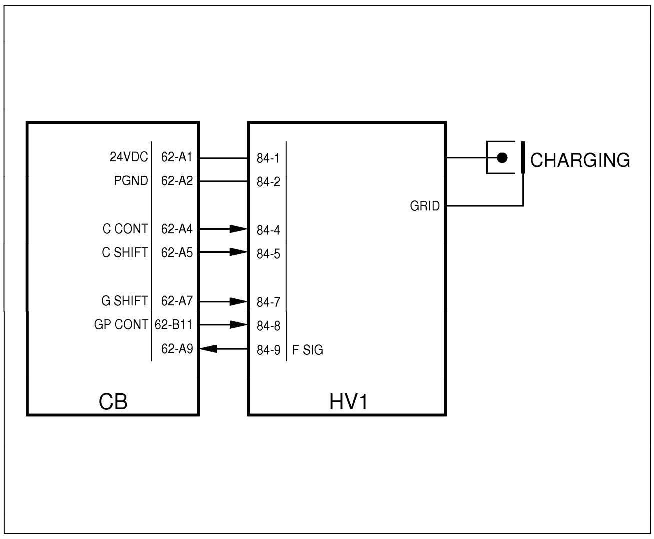
a. Procedure

(1) Remove the transfer and separation corona unit.
(2) Remove the plunging prevention plate.
(3) Remove the spark arrestor plate (front).
(4) Remove the transfer wire cleaning block and the separation wire cleaning block.
(5) Remove the spark arrestor plate (rear).
(6) Remove the spring from each wire, then remove each wire. Each wire comes away together with the support rubber.


Spark arrestor plate (rear)
Spark arrestor plate (front)
Support rubber
Transfer wire
Transfer wire cleaning block
Springs
Separation wire cleaning block
Plunging prevention plate
Separation wires
Support rubbers
Transfer and separation wire cleaning motor (M8)

(7) Re-install the transfer and separation wires in the opposite sequence to removal.

[4] Charging Control


24VDC
62-A1
PGND
62-A2
C CONT
62-A4
C SHIFT
62-A5
G SHIFT
62-A7
GP CONT
62-B11
62-A9
CB
84-1
84-2
84-4
84-5
84-7
84-8
84-9
F SIG
GRID
HV1
CHARGING

HV1 (high voltage unit 1), which controls charging, operates by means of control signals from the CB (control board), and outputs a high voltage to the charging wires.

1. Operation

a. Charging

A Scorotron charging method is used. 24 VDC input from the CB is raised to a negative DC high voltage which is then discharged.

b. Charging correction by means of the grid voltage

The grid voltage is output from HV1 to the charging plate.

2. Signal

a. Input signal

(1) F SIG (HV1 → CB)
[L] is output when the spark detection circuit operates and forcibly turns OFF the charging output.

b. Output signals

(1) C CONT (CB → HV1)
Charging and grid voltage ON/OFF control signal
[L]: Charging and grid voltage ON
[H]: Charging and grid voltage OFF

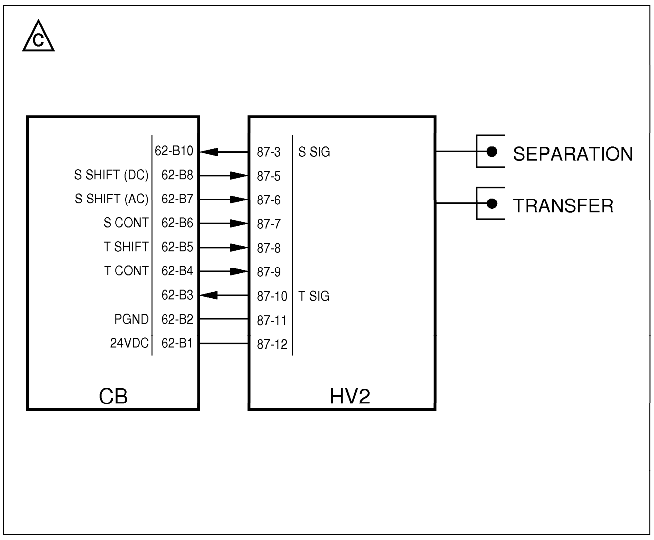
(2) C SHIFT (CB → HV1)
The charging corona unit output level is controlled by means of analog signals from the CB.

C SHIFT output range	4 to 10 V
Charging output range	-600 to -900 µA

(3) G SHIFT (CB → HV1)
The charging grid voltage output level is controlled by analog signals from the CB.

G SHIFT output range	4 to 10 V
Grid voltage output range	-500 to -900 V

[5] Transfer/Separation Control


C
62-B10
S SHIFT (DC) 62-B8
S SHIFT (AC) 62-B7
S CONT 62-B6
T SHIFT 62-B5
T CONT 62-B4
62-B3
PGND 62-B2
24VDC 62-B1
CB
87-3 S SIG
87-5
87-6
87-7
87-8
87-9
87-10 T SIG
87-11
87-12
HV2
SEPARATION
TRANSFER

Transfer and separation is controlled by the CB (control board) and HV2 (high voltage unit 2).

1. Operation

a. Transfer

A positive DC high voltage is used for transfer.

b. Separation

An AC high voltage is used for separation.

2. Signals

a. Input signals

(1) T SIG (HV2 → CB)
[L] is output when the transfer spark detection circuit operates.

(2) S SIG (HV2 → CB)
[L] is output when the separation spark detection circuit operates.

b. Output signals

(1) T CONT (CB → HV2)
Signal which turns the transfer corona unit ON/OFF.
When this signal is [L], the transfer corona unit is ON.

(2) T SHIFT (CB → HV2)
Transfer corona unit output level control signal.
This signal controls the transfer corona unit output level using analog signals from the CB.

G SHIFT output range	4 to 10 V
Grid voltage output range	-50 to 600 µV

(3) S CONT (CB → HV2)
Separation corona unit ON/OFF control signal.
When this signal is [L], the separation corona unit is ON.

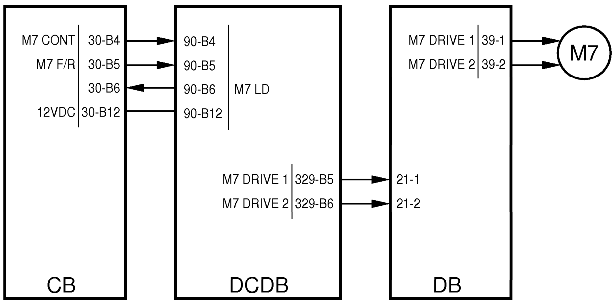
(4) S SHIFT (AC) (CB → HV2)
Separation corona unit output level control signal.
This signal controls the separation corona unit output level (AC component) using analog signals from the CB.

S SHIFT (AC) output range	4 to 10 V
Separation AC voltage output range	4.0 to 5.7 kV

(5) S SHIFT (DC) (CB → HV2)
Separation corona unit output level control signal.
This signal controls the separation corona unit output level (DC component) using analog signals from the CB.

S SHIFT (DC) output range	4 to 10 V
Separation DC bias voltage output range	0 to -400 µA

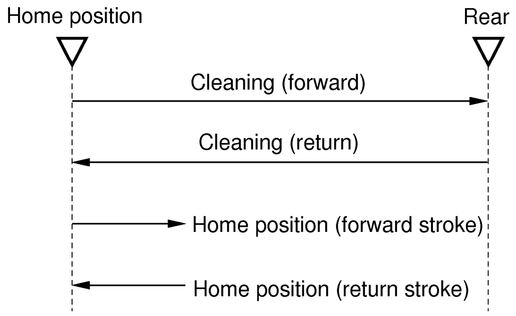
[6] M7 (charging wire cleaning) control


M7 CONT
30-B4
M7 F/R
30-B5
30-B6
12VDC
30-B12
CB
90-B4
90-B5
90-B6
M7 LD
90-B12
M7 DRIVE 1
329-B5
M7 DRIVE 2
329-B6
DCDB
M7 DRIVE 1
39-1
M7 DRIVE 2
39-2
21-1
21-2
DB
M7

M7 (charging wire cleaning) is driven by the DCDB (drum drive board) via the DB (drum relay board). The DCDB is controlled by the CB (control board).

1. Operation

a. M7 is used to drive the charging wire cleaning unit. Also, the drive voltage and rotational speed of M7 are as follows.
   Drive voltage: 12 VDC
b. Cleaning of the charging wire takes place if the fixing temperature is less than 50°C when the machine is switched ON.
c. Cleaning operation
   The home position of the cleaning unit is on the front side of the machine. The cleaning unit operates as follows.


Home position
Rear
Cleaning (forward)
Cleaning (return)
Home position (forward stroke)
Home position (return stroke)

(1) Forward stroke of cleaning operation
    The forward stroke takes place when the M7 F/R signal from the CB is [L] (forward rotation) and also the M7 CONT signal is [L].
(2) Return stroke of cleaning operation
    The return stroke of the cleaning operation takes place when the M7 F/R signal from the CB is [H] (reverse rotation) and also the M7 CONT signal is [L].
(3) M7 stop conditions
    The M7 CONT signal becomes [H] and M7 stops when the M7 LD signal becomes [L], regardless of whether M7 is rotating in the forward or reverse direction.

2. Signals

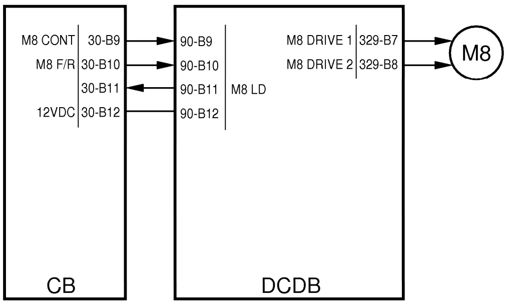
a. Output signals

(1) M7 F/R (CB → DCDB)
    Signal that determines the rotational direction of M7
    L: Forward direction (Home position → Rear)
    H: Reverse direction (Rear → Home position)
(2) M7 CONT (CB → DCDB)
    Signal that controls the ON/OFF state of M7
    L: M7 ON
    H: M7 OFF
(3) M7 DRIVE (DCDB → DB → M7)
    M7 drive signal

b. Input signal

(1) M7 LD (DCDB → CB)
    If M7 locks, this signal becomes [L], and the CB changes the direction of rotation of M7, or stops it.

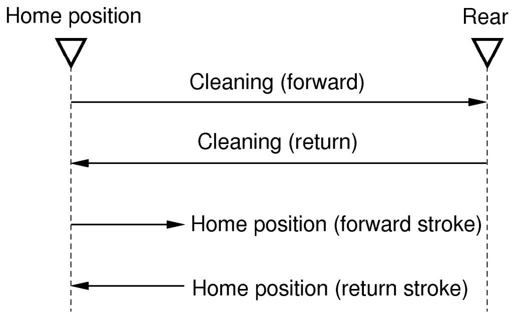
[7] M8 (transfer/separation wire cleaning) Control


M8 CONT
30-B9
M8 F/R
30-B10
30-B11
12VDC
30-B12
CB
90-B9
90-B10
90-B11
M8 LD
90-B12
M8 DRIVE 1
329-B7
M8 DRIVE 2
329-B8
DCDB
M8

M8 (transfer/separation wire cleaning) is driven by the DCDB (drum drive board) which is controlled by the CB (control board).

1. Operation

a. M18 is used to drive the transfer/separation wire cleaning unit. The drive voltage and rotational speed of M8 are as follows.
   Drive voltage: 12 VDC
b. Cleaning of the transfer/separation wire takes place if the fixing temperature is less than 50°C when the machine is switched ON.
c. Cleaning operation
   The home position of the cleaning unit is on the front side of the machine. The cleaning unit operates as follows.


Home position
Rear
Cleaning (forward)
Cleaning (return)
Home position (forward stroke)
Home position (return stroke)

(1) Forward stroke of cleaning operation
    The forward stroke takes place when the M8 F/R signal from the CB is [L] (forward rotation), and also the M8 CONT signal is [L].

(2) Return stroke of cleaning operation
    The return stroke of the cleaning operation takes place when the M8 F/R signal from the CB is [H] (reverse rotation), and also the M8 CONT signal is [L].

(3) M8 stop conditions
    The M8 CONT signal becomes [H] and M8 stops when the M8 LD signal becomes [L], regardless of whether M8 is rotating in the forward or reverse direction.

2. Signals

a. Output signals

(1) M8 F/R (CB → DCDB)
    Signal that determines the rotational direction of M8
    L: Forward direction (Home position → Rear)
    H: Reverse direction (Rear → Home position)

(2) M8 CONT (CB → DCDB)
    Signal that controls the ON/OFF state of M8
    L: M8 ON
    H: M8 OFF

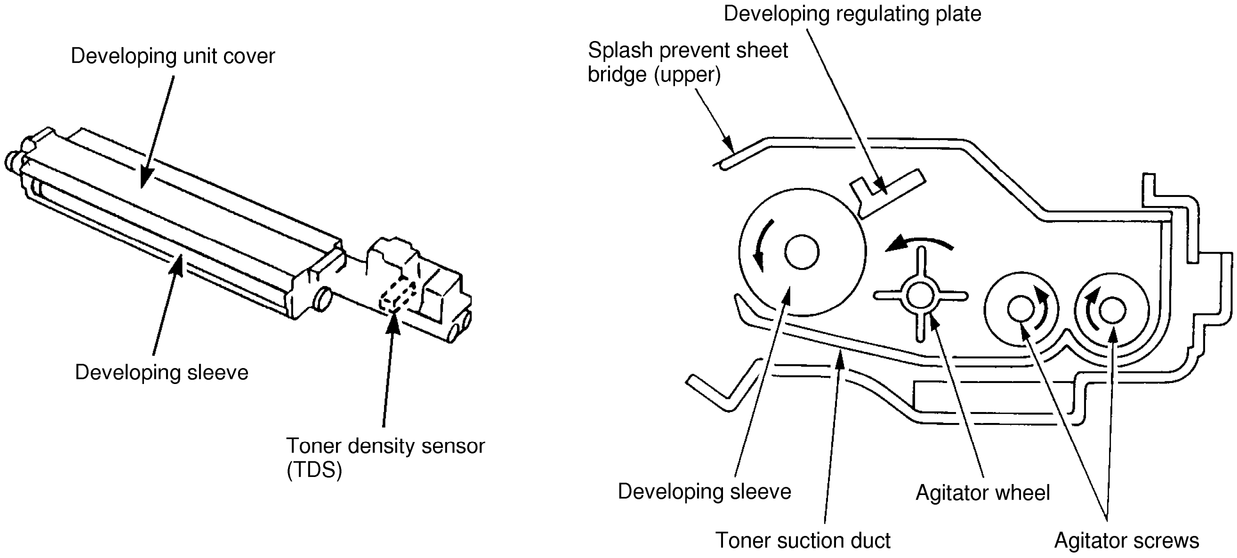
(3) M8 DRIVE (DCDB → DB → M8)
    M8 drive signal

b. Input signal

(1) M8 LD (DCDB → CB)
    If M8 locks, this signal becomes [L], and the CB changes the direction of rotation of M8, or stops it.

DEVELOPING UNIT

[1] Composition


Developing unit cover
Developing sleeve
Toner density sensor (TDS)
Developing regulating plate
Splash prevent sheet bridge (upper)
Developing sleeve
Agitator wheel
Toner suction duct
Agitator screws

[2] Mechanism

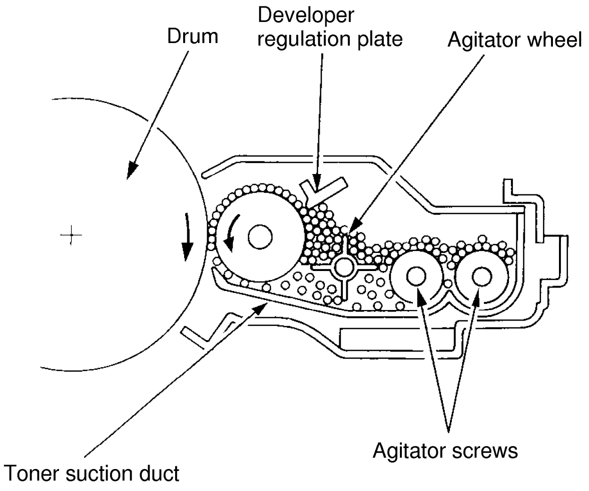
Mechanism	Method
Developing	2-component developer
Developing bias	DC bias
Developer agitation	Main agitator Auxiliary agitator

1. Developing unit drive

The drive for the developing unit is divided into the drive for the developing sleeve and that for the agitating section. These parts are driven by the developing drive motor (M3) and the agitator screw motor (M35), respectively.

2. Flow of developer

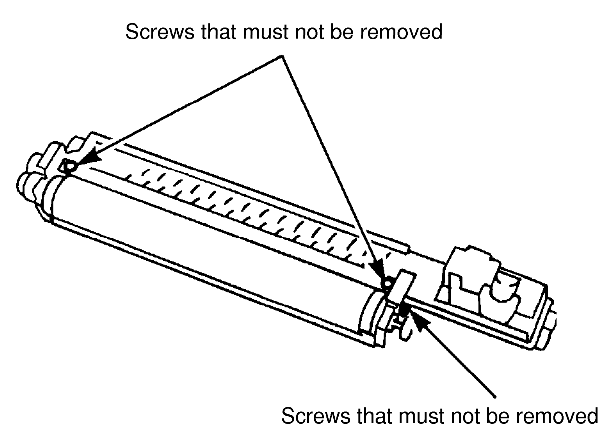
The developer inside the developing unit is supplied to the developing sleeve by the agitator wheel, and maintained at a constant thickness by the developing regulation plate (bristle height regulation plate). The developer remaining on the developing sleeve is returned to the agitator screw.


Drum
Developer regulation plate
Agitator wheel
Agitator screws
Toner suction duct

[3] Disassembly/Assembly

1. Screws that must not be removed

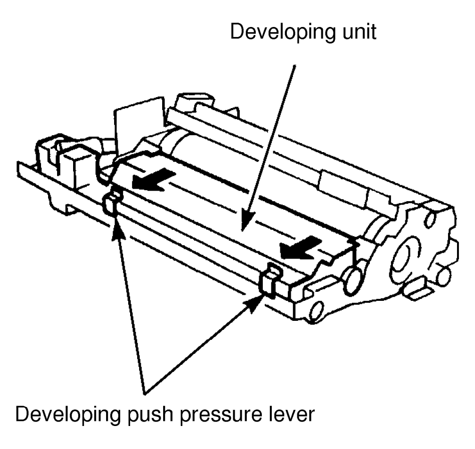
(1) The two set screws of the developer regulation plate
(2) The set screw for adjusting the magnet angle


Screws that must not be removed
Screws that must not be removed

2. Removing and Re-installing the Developing Unit

a. Procedure

(1) Remove the drum unit from the main body.
(2) Release the developing push pressure levers (front and rear). Then, disconnect the density sensor connector.
(3) Remove the developing unit from the drum unit.

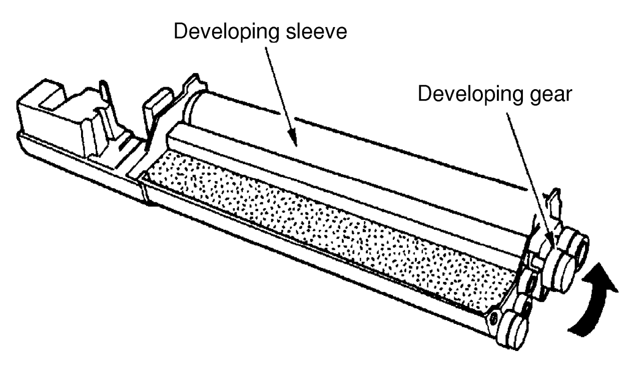

Developing unit
Developing push pressure lever

(4) Re-install the developing unit in the opposite sequence to removal.

3. Replacing the developer

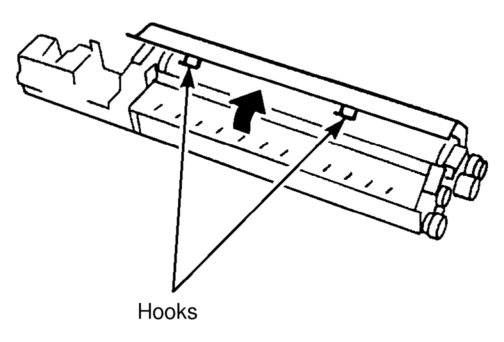
Caution:

1. When replacing the developer, take care that dirt does not become mixed with it.
2. If the developing sleeve is rotated, the developing gear rotates in the counterclockwise direction. NEVER rotate the developing gear in the clockwise direction.

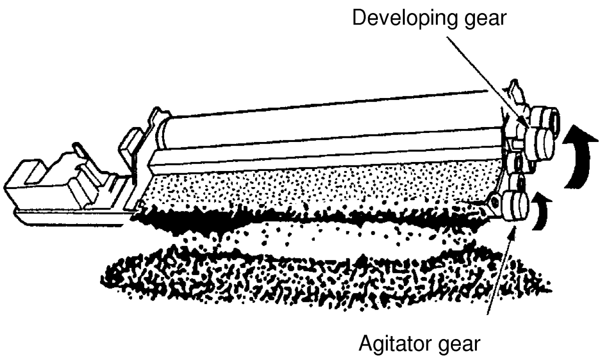

Developing sleeve
Developing gear

a. Procedure

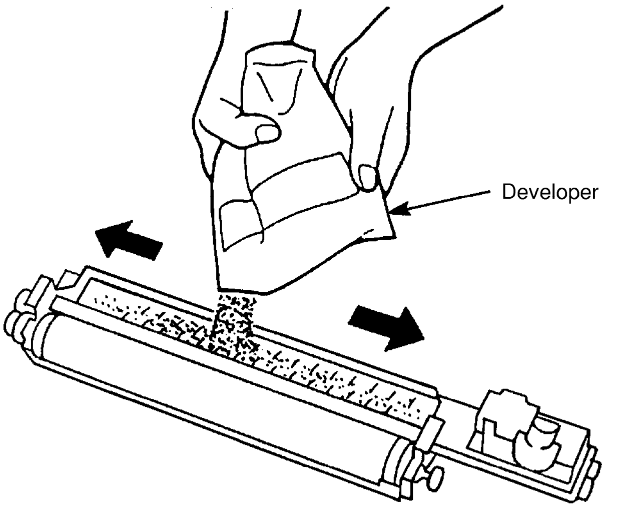
(1) Remove the drum unit from the main body.
(2) Remove the developing unit from the drum unit.
(3) Release the hooks on the developing unit cover, then lift up and remove the cover.



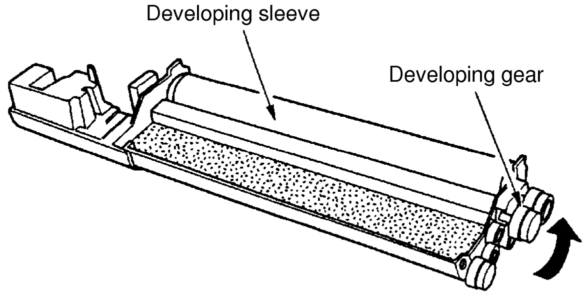
(4) Tilt the developing unit, then rotate the developing gear in the counterclockwise direction until all of the developer adhering to the inside of the developing unit and the magnet roller is discharged.



(5) Supply fresh developer evenly from the top of the agitator screw.
(6) Rotate the agitator gear counterclockwise until all of the developer enters the developing unit.
(7) Repeat steps (5) and (6) until all of the developer has been supplied to the developing unit.



(8) Rotate the developing gear in the counterclockwise direction, and confirm that the developer bristles along the entire length of the developing sleeve.

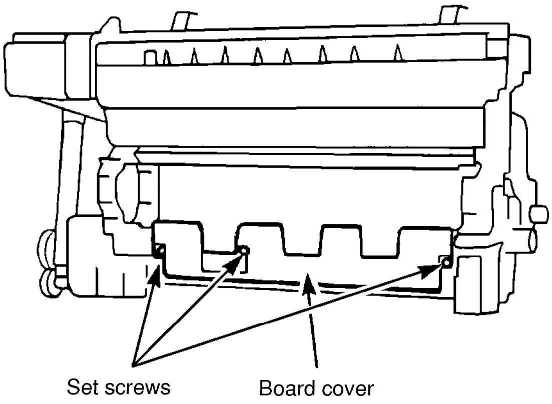


(9) Install the developing cover, then install the developing unit on the drum unit.

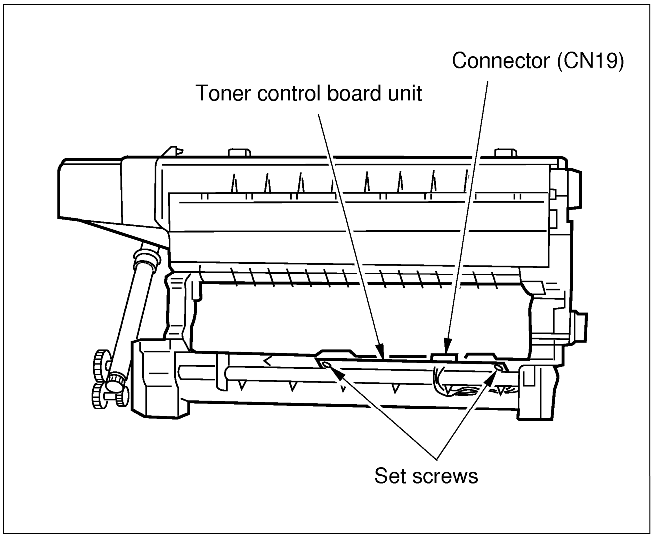
4. Removing and Re-installing the Toner Control Board Unit

a. Procedure

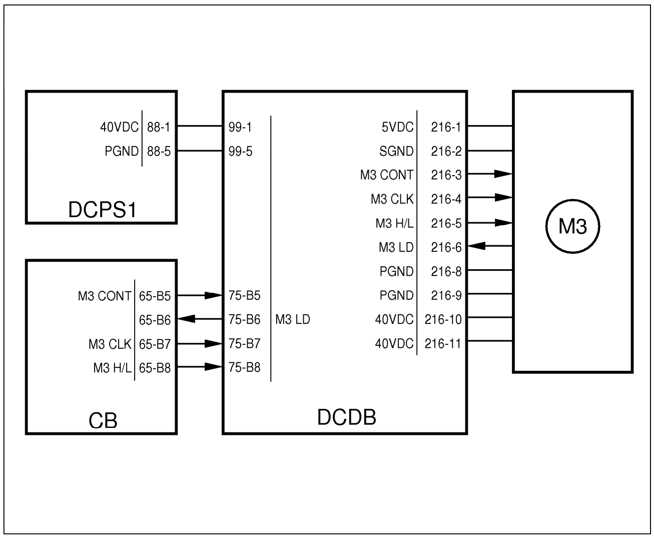
(1) Remove the drum unit from the main body.
(2) Remove the drum from the drum unit.
(3) Remove the three set screws, then remove the board cover.



(4) Remove the three set screws, then remove the toner control board unit.
(5) Disconnect the connector (CN19) from the toner control board.
(6) Re-install the toner control board unit in the opposite sequence to removal.


Connector (CN19)
Toner control board unit
Set screws

[4] M3 (developing drive) Control


40VDC 88-1
PGND 88-5
DCPS1
M3 CONT 65-B5
65-B6
M3 CLK 65-B7
M3 H/L 65-B8
CB
99-1
99-5
75-B5
75-B6
75-B7
75-B8
M3 LD
5VDC 216-1
SGND 216-2
M3 CONT 216-3
M3 CLK 216-4
M3 H/L 216-5
M3 LD 216-6
PGND 216-8
PGND 216-9
40VDC 216-10
40VDC 216-11
DCDB
M3

M3 (developing drive) is controlled by the CB via the DCDB (DC driver board).

1. Operation

M3 is a 40 V drive DC motor which drives the developing sleeve. M3 is PLL-controlled by feedback signals from a speed sensor installed inside M3 itself, maintaining it at a constant speed.

M3 goes ON after the specified time from when the Copy button is pressed, and goes OFF again after the specified time from the completion of charging control.

2. Signals

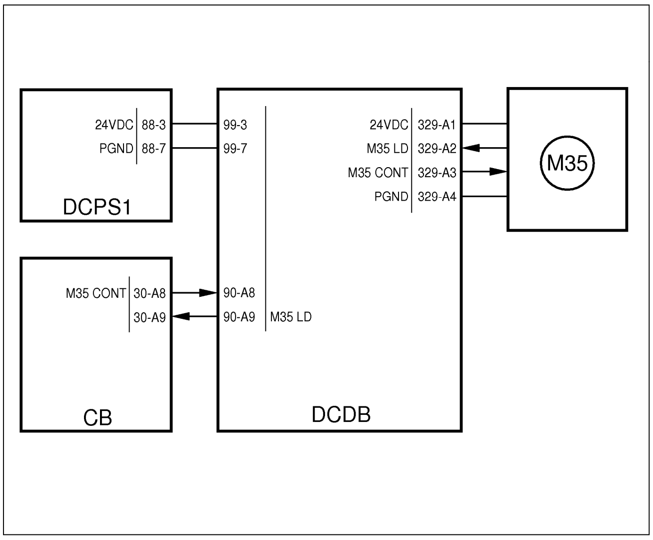
a. Input signal

(1) M3 LD (M3 → DCDB → CB)
[L] is output when M3 reaches the specified speed.

b. Output signals

(1) M3 CONT (CB → DCDB → M3)
M1 drive control signal
[L]: M1 ON
[H]: M1 OFF
(2) M3 CLK (CB → DCDB → M3)
M3 rotational speed control reference clock signal
(3) M3 H/L (CB → DCDB → M3)
M3 rotational speed control gain switching signal
[L]: 1000 to 2000 rpm
[H]: 532 to 1000 rpm

[5] M35 (agitator screw) control


24VDC
88-3
PGND
88-7
DCPS1
99-3
99-7
24VDC
329-A1
M35 LD
329-A2
M35 CONT
329-A3
PGND
329-A4
M35
M35 CONT
30-A8
30-A9
90-A8
90-A9
M35 LD
CB
DCDB

M35 (agitator screw) is controlled by the CB via the DCDB (DC driver board).

1. Operation

M35 is a 24 V DC motor which drives the agitator screw and the agitator wheel. M35 is PLL-controlled using feedback signals from the speed sensor installed inside M35, maintaining it at a constant speed.

M35 goes ON when the Copy button is pressed, and goes OFF again when the last copy has been exited.

If the upper fixing roller does not reach the set temperature within the specified time from the start of warmup, M35 goes ON/OFF in synchronism with M1 (main) until completion of warmup because recycle section is operated by M1.

2. Signals

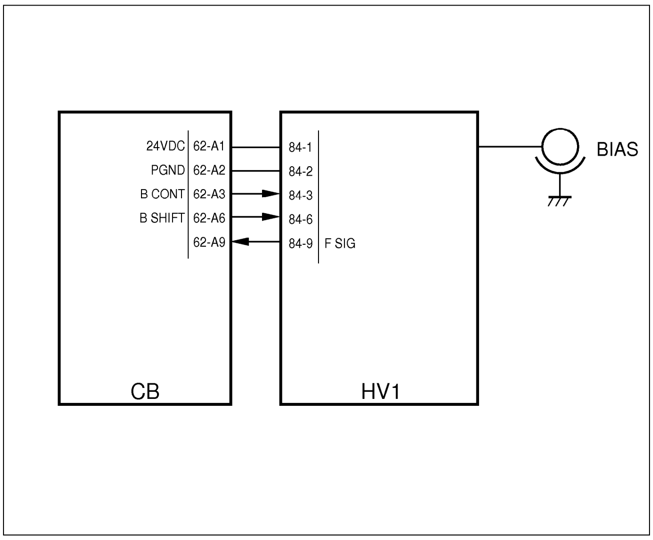
a. Input signal

(1) M35 LD (M35 → DCDB → CB)
[L] is output when M35 reaches the specified speed.

b. Output signal

(1) M35 CONT (CB → DCDB → M35)
M35 drive control signal
[L]: M35 ON
[H]: M35 OFF

[6] Developing Bias Control


24VDC
62-A1
PGND
62-A2
B CONT
62-A3
B SHIFT
62-A6
62-A9
84-1
84-2
84-3
84-6
84-9
F SIG
BIAS
CB
HV1

The developing bias is controlled by the CB (control board) via HV1 (high voltage power supply 1).

1. Operation

The developing bias is applied to the sleeve in synchronism with M3 (developing drive).

2. Signals

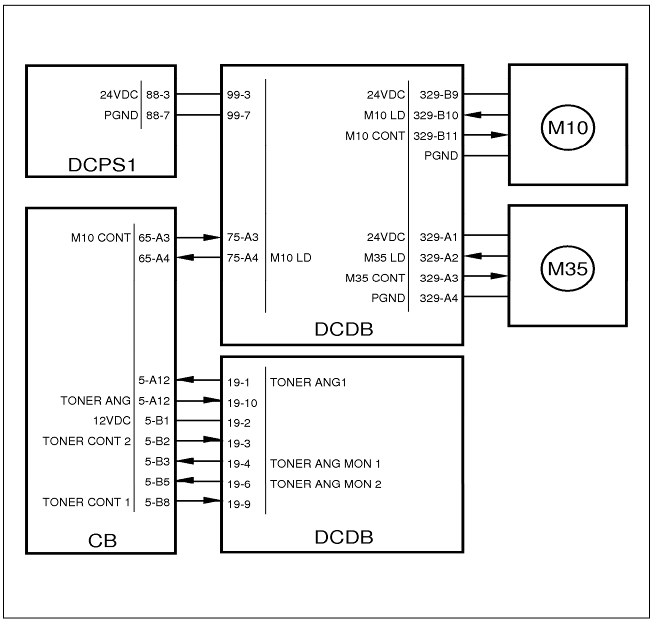
a. Output signals

(1) B CONT (CB → HV1)
Developing bias ON/OFF control signal.
When this signal is [L], the developing bias goes ON, and a high voltage is output.

(2) B SHIFT (CB → HV1)
This signal controls the output level of the developing bias by means of analog signals from the CB.

B SHIFT output range	2 to 8 V
Bias voltage output range	-400 to 700 VDC

[7] Toner Density Control


24VDC
PGND
88-3
88-7
DCPS1
99-3
99-7
24VDC
M10 LD
M10 CONT
PGND
329-B9
329-B10
329-B11
M10
M10 CONT
65-A3
65-A4
75-A3
75-A4
M10 LD
24VDC
M35 LD
M35 CONT
PGND
329-A1
329-A2
329-A3
329-A4
M35
DCDB
5-A12
TONER ANG
5-A12
12VDC
5-B1
TONER CONT 2
5-B2
5-B3
5-B5
TONER CONT 1
5-B8
CB
19-1
19-10
19-2
19-3
19-4
19-6
19-9
TONER ANG1
TONER ANG MON 1
TONER ANG MON 2
DCDB

The toner density is controlled by the TDS (toner density sensor), M35 (agitator screw), M10 (toner supply) and the CB (control board).

1. Operation

a. Toner density detection

The TDS detects the density of the toner in the developing unit using an L detection method, and outputs an analog voltage signal that is proportion to the density to the CB. The CB compares the detected voltage with the reference voltage corresponding to the initial density of the developer, and judges the necessity of supplying toner.

b. Toner supply operation

M10 is driven by 24 VDC supplied from the DCDB (DC driver board).

(1) When the power is switched ON
M35 (agitator screw) starts to rotate as soon as the machine is switched ON, then after 3 minutes the toner density is read. This density is compared with the initial density of the developer, and if the density is low, toner supply takes place.(recovered until its initial density)

(2) During a copy operation
The relationship between the TDS output voltage and the toner supply time is as follows.

Sensor output voltage	Supply time
2 V or less	0 sec
2 to 2.11 V	0.24 sec
2.12 to 2.19 V	0.48 sec
2.20 to 2.29 V	0.72 sec
2.30 to 2.37 V	0.96 sec
2.38 to 2.45 V	1.20 sec
2.46 V or more	1.80 sec

2. Signals

a. Input signals

(1) TDS ANG (TDS → CB)
An analog voltage proportional to the toner density is output.

(2) M10 LD (M10 → DCDB → CB)
[L] is output when M10 reaches the specified speed.

(3) M35 LD (M35 → DCDB → CB)
[L] is output when M35 reaches the specified speed.

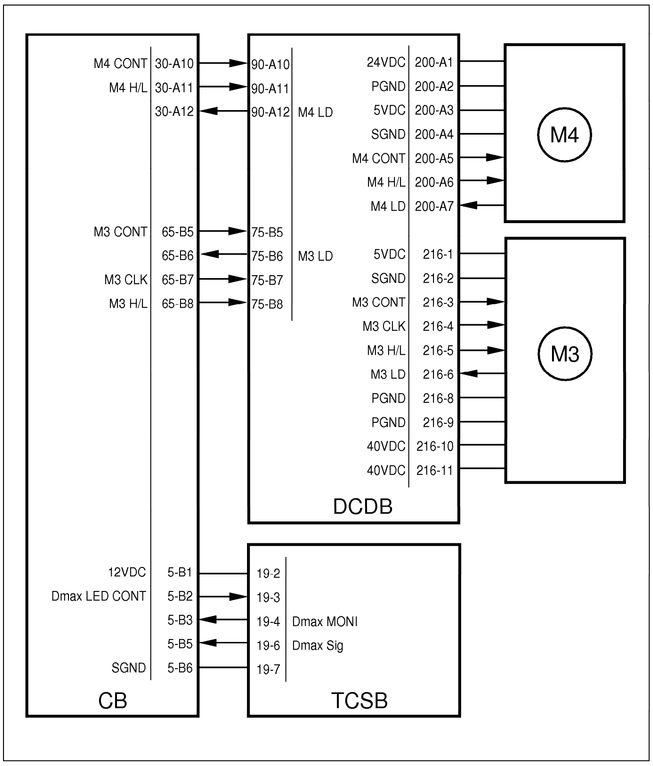
b. Output signals

(1) TDS CONT (CB → TDS)
TDS output voltage adjustment signal
Output voltage adjustment: 4.9 to 9.8 V

(2) M10 CONT (CB → DCDB → M10)
M10 drive control signal
Toner is supplied when M10 is ON.
[L]: M10 ON
[H]: M10 OFF

(3) M35 CONT (CB → DCDB → M35)
M35 drive control signal
[L]: M35 ON
[H]: M35 OFF

[8] Dmax Control


M4 CONT 30-A10
M4 H/L 30-A11
30-A12
M3 CONT 65-B5
65-B6
M3 CLK 65-B7
M3 H/L 65-B8
12VDC 5-B1
Dmax LED CONT 5-B2
5-B3
5-B5
SGND 5-B6
CB
90-A10
90-A11
90-A12 M4 LD
75-B5
75-B6 M3 LD
75-B7
75-B8
24VDC 200-A1
PGND 200-A2
5VDC 200-A3
SGND 200-A4
M4 CONT 200-A5
M4 H/L 200-A6
M4 LD 200-A7
5VDC 216-1
SGND 216-2
M3 CONT 216-3
M3 CLK 216-4
M3 H/L 216-5
M3 LD 216-6
PGND 216-8
PGND 216-9
40VDC 216-10
40VDC 216-11
DCDB
M4
M3
19-2
19-3
19-4 Dmax MONI
19-6 Dmax Sig
19-7
TCSB

Dmax control is done by the TCSB (toner control sensor board), M4 (drum), M3 (developing drive), and so on. These parts are controlled by the CB.

1. Operation

Dmax control is intended to align the maximum density for each machine with the reference level.

(1) Contents of implementation

Latent images are created several times at the maximum exposure, the images are developed while the rotational speed of the sleeve is varied, then each density is read by the PD1 on the TCSB.

The rotational speed of the sleeve when the density reaches the reference level is memorized as the optimum sleeve speed, then subsequently developing is carried out at this sleeve speed until Dmax correction takes place next.

(2) Implementation timing

1) When the power is switched ON
2) Every 1000 copies

2. Signals

a. Input signals

(1) Dmax sig (TCSB → CB)
Output voltage of the Dmax value detection sensor on the TCSB
Reference voltage: 1.5 V

(2) Dmax MONI (TCSB → CB)
This signal monitors the light reflected from the surface of the drum (without toner), and corrects the voltage applied to the Dmax detection LED (calibration).
Reference voltage: 6 V

<Implementation timing>
Calibration takes place before Dmax correction.

(3) M3 LD (M3 → DCDB → CB)
[L] is output when M3 reaches the specified speed.

(4) M4 LD (M4 → DCDB → CB)
[L] is output when M4 reaches the specified speed.

b. Output signal

(1) Dmax LED CONT (CB → TCSB)
DC voltage is supplied to LED of PD1 by this line.
CB changes this voltage until Dmax MONI signal becomes 6V.

(2) M3 CONT (CB → DCDB → M3)
M3 drive control signal
[L]: M1 ON
[H]: M1 OFF

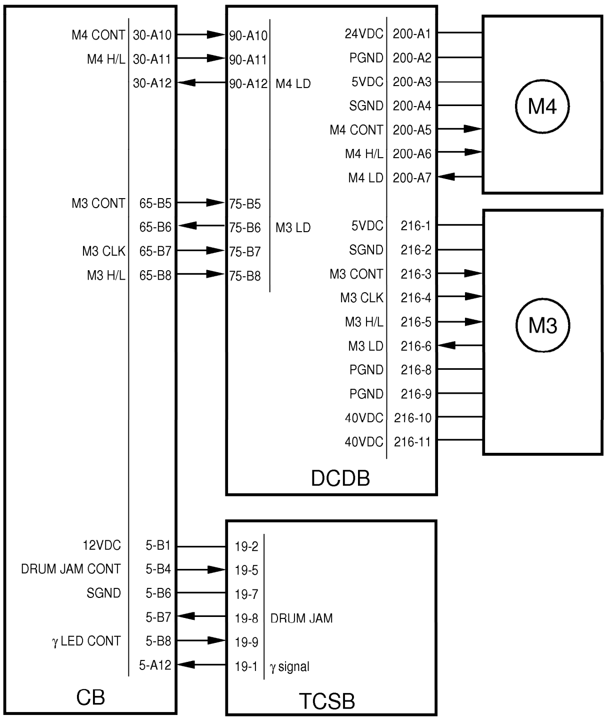
(3) M3 CLK (CB → DCDB → M3)
M3 rotational speed control reference clock signal

(4) M3 H/L (CB → DCDB → M3)
M3 rotational speed control gain switching signal
[L]: 1000 to 2000 rpm
[H]: 532 to 1000 rpm

(5) M4CONT (CB → DCDB → M4)
M4 drive control signal
[L]: M4 ON
[H]: M4 OFF

(6) M4 H/L (CB → DCDB → M4)
M4 rotational speed switchover signal

Normally [H]: 280 mm/sec

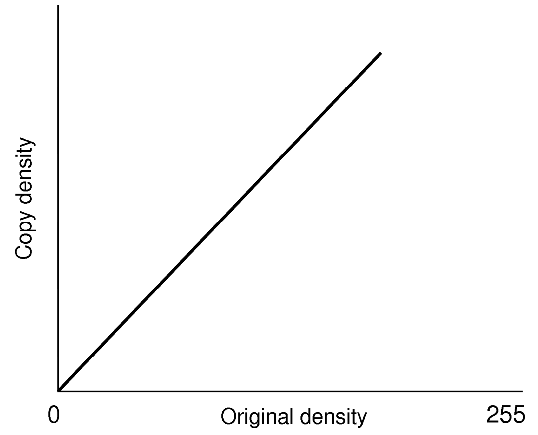

M4 CONT
M4 H/L
30-A10
30-A11
30-A12
90-A10
90-A11
90-A12
M4 LD
24VDC
PGND
5VDC
SGND
M4 CONT
M4 H/L
M4 LD
200-A1
200-A2
200-A3
200-A4
200-A5
200-A6
200-A7
M4
M3 CONT
M3 CLK
M3 H/L
65-B5
65-B6
65-B7
65-B8
75-B5
75-B6
75-B7
75-B8
M3 LD
5VDC
SGND
M3 CONT
M3 CLK
M3 H/L
M3 LD
PGND
PGND
40VDC
40VDC
216-1
216-2
216-3
216-4
216-5
216-6
216-8
216-9
216-10
216-11
M3
DCDB
12VDC
DRUM JAM CONT
SGND
γ LED CONT
5-B1
5-B4
5-B6
5-B7
5-B8
5-A12
19-2
19-5
19-7
19-8
19-9
19-1
DRUM JAM
γ signal
CB
TCSB

[9] Gradation Correction Control

Gradation correction control is done by the TCSB (toner control sensor board), M4 (drum), M3 (developing drive). These parts are controlled by the CB.

1. Operation

The gradation characteristics of the toner density versus exposure amount at the image forming section of each machine is detected, and gradation correction processing carried out in order to obtain a linear relation between the original density and the copy density.



(1) Contents of implementation

Exposure is performed while the laser exposure is varied over several steps, and development is performed at the sleeve speed resulting from Dmax correction.

Subsequently, each density is read by PD2 on the TCSB, and the toner density and the gradation characteristics of the toner density detected.

The gradation characteristics obtained here are used as the correction values for the laser exposure amount.

(2) Implementation timing

1) When the power is switched ON

2. Signals

a. Input signal

(1) γ signal (TCSB → CB)

Output voltage from the gray scale detection sensor (PD2) on the TCSB

(2) DRUM JAM (TCSB → CB)

This signal detects a jam caused by paper wrapping around the drum. If it is more than 4.3 V, the CB judges that a jam has occurred.

(3) M3 LD (M3 → DCDB → CB)

[L] is output when M3 reaches the specified speed.

(4) M4 LD (M4 → DCDB → CB)

[L] is output when M4 reaches the specified speed.

b. Output signal

(1) γ LED CONT (CB → TCSB)

ON/OFF control signal for the gray scale detection LED

[L]: LED ON
[H]: LED OFF

(2) DRUM JAM CONT (CB → TCSB)

This signal controls the ON or OFF state of the wrapping jam detection LED.

[L]: LED ON
[H]: LED OFF

(3) M3 CONT (CB → DCDB → M3)

M1 drive control signal

[L]: M1 ON
[H]: M1 OFF

(4) M3 CLK (CB → DCDB → M3)

M3 rotational speed control reference clock signal

(5) M3 H/L (CB → DCDB → M3)

M3 rotational speed control gain switching signal

[L]: 1000 to 2000 rpm
[H]: 532 to 1000 rpm

(6) M4CONT (CB → DCDB → M4)

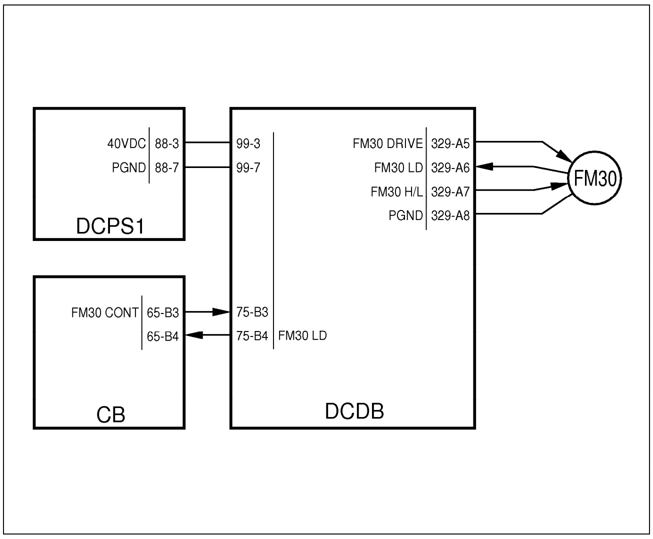
M4 drive control signal

[L]: M4 ON
[H]: M4 OFF

(7) M4 H/L (CB → DCDB → M4)

M4 rotational speed switchover signal

Normally [H]: 280 mm/sec


40VDC
PGND
88-3
88-7
DCPS1
FM30 CONT
65-B3
65-B4
CB
99-3
99-7
75-B3
75-B4
FM30 LD
FM30 DRIVE
FM30 LD
FM30 H/L
PGND
329-A5
329-A6
329-A7
329-A8
DCDB
FM30

[10] FM30 (developing suction) Control

FM30 (developing suction) is controlled by the CB (control board) via the DCDB (DC driver board).

1. Operation

FM30 is a 24 V DC motor.
It goes ON and OFF in synchronism with M1 (main).

2. Signals

a. Input signals

(1) FM30 LD (FM30 → DCDB → CB)
[L] is output when FM30 reaches the specified speed.

b. Output signals

(1) FM30 CONT (CB → DCDB)
ON/OFF control signal for FM30
[L]: FM30 ON
[H]: FM30 OFF

(2) FM30 DRIVE (DCDB → FM30)
Drive control signal for FM30
[L]: FM30 OFF
[H]: FM30 ON

(3) FM30 H/L (DCDB → FM30)
FM30 rotational speed control signal.
This signal is always [L].

3

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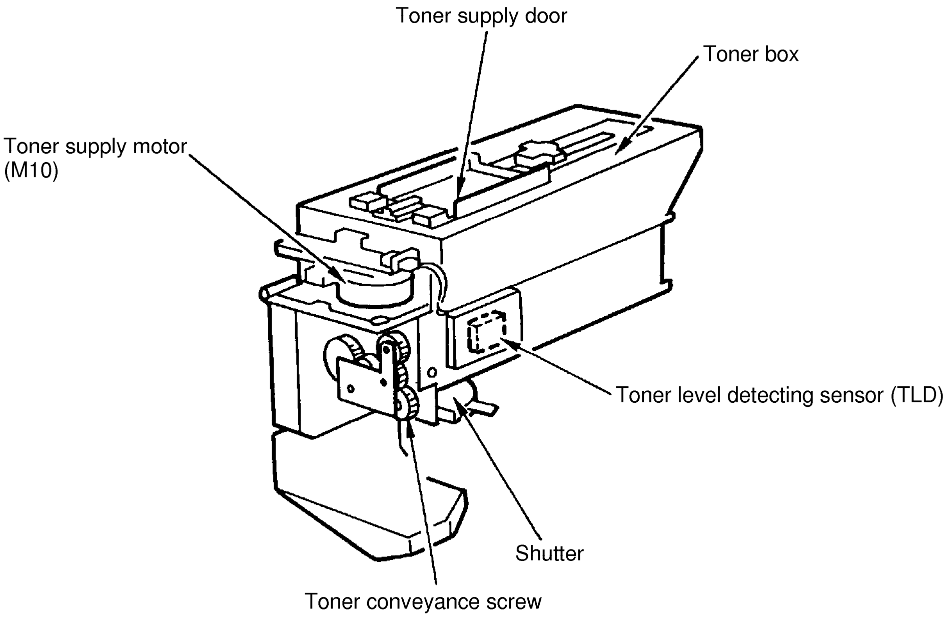
TONER SUPPLY UNIT

[1] Composition


Toner supply door
Toner box
Toner supply motor (M10)
Toner level detecting sensor (TLD)
Shutter
Toner conveyance screw

[2] Mechanisms

	Mechanism	Method
*1	Toner supply	Screw conveyance
	Toner level detection	Piezoelectric method 185g±50g
	Toner agitating	Agitator plate
	Toner box	Capacity 1330g
*2	Toner leakage prevention	Toner supply shutter

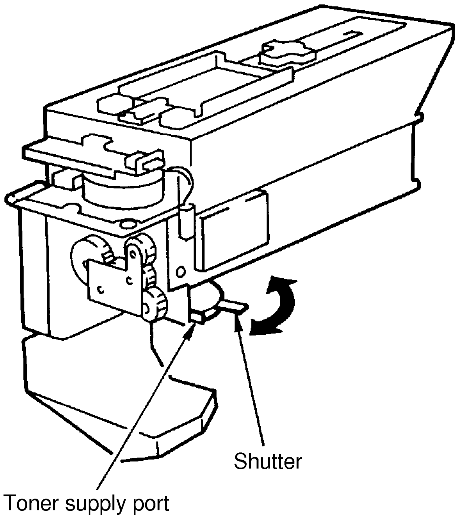
*1: Toner supply

a. The rotational force of the toner supply motor is transmitted via gears to the toner conveyance screw and the toner agitator shaft, causing the shaft to rotate.

b. The toner that has been agitated by the agitator plate installed on the toner agitator shaft is supplied to the developing unit.

*2: Toner supply shutter

When installing the toner cartridge, move forward the toner supply unit. This causes the toner supply port to close, preventing leakage of toner. When you return the toner supply unit to the main body (normal position), the toner supply port coincides with the developing unit.


Shutter
Toner supply port

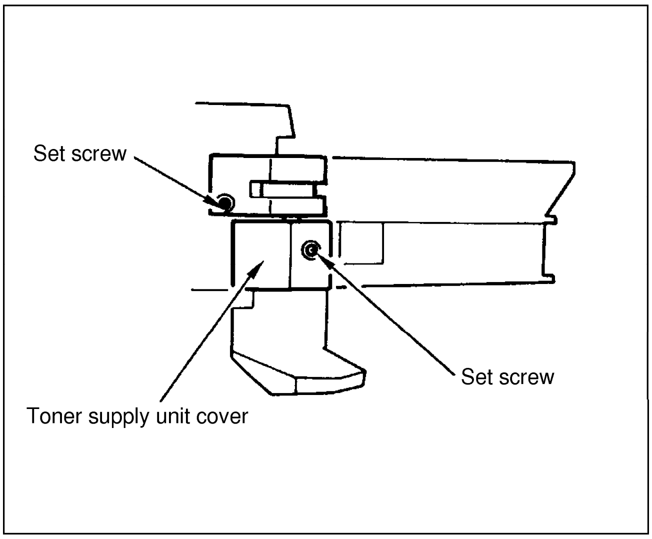
[3] Disassembly and Re-assembly

1. Removing and Re-installing the Toner Supply Unit

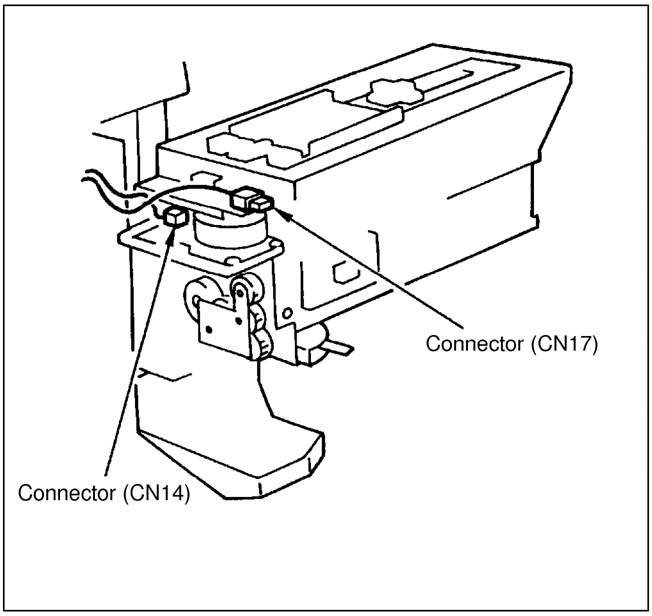
a. Procedure

(1) Open the front door, slacken the set screw, release the lock of the toner supply unit, then pull forward the toner supply unit.

(2) Slacken the set screw shown at top left of the figure, and remove the set screw shown at bottom right, then remove the cover of the toner supply unit.

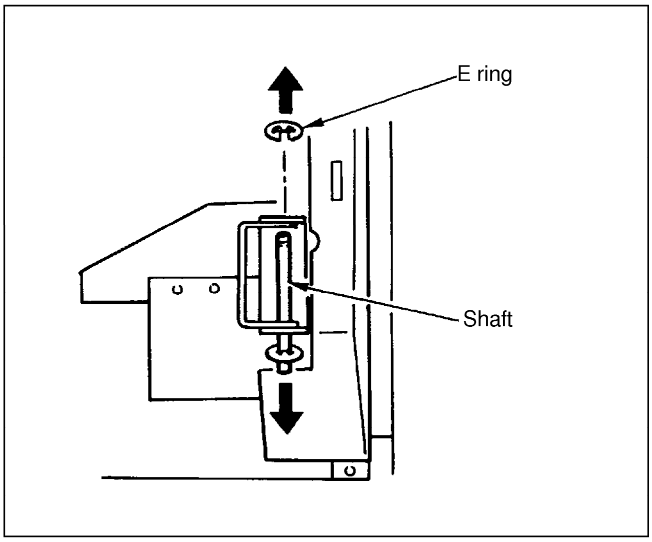

Set screw
Set screw
Toner supply unit cover

(3) Disconnect the two connectors (CN17 and 14).


Connector (CN17)
Connector (CN14)

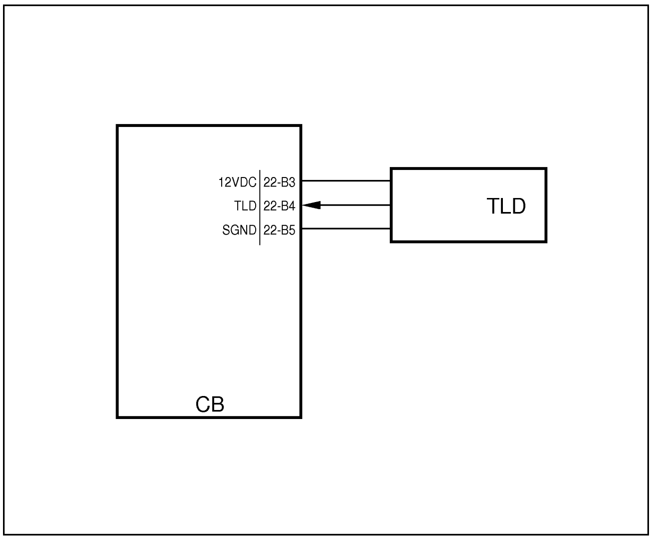
(4) Close the toner supply unit, then remove the E ring.

(5) Pull out the shutter toward the bottom, then remove the toner supply unit.


E ring
Shaft

(6) Re-install the toner supply unit in the opposite sequence to removal.

[4] Toner Level Detection Control



Toner level detection control is done by the TLD (toner level detecting sensor) and the CB (control board).

1. Operation

a. Toner level detecting sensor

A piezoelectric device is used as the TLD.

When the level of toner in the toner box becomes low, the "supply toner" signal is output to the CB. As a result, a message is displayed on the LCD (VFD1, VRD2) connected to OB2 (operation board 2).

b. Detection timing

The detection timing is as follows.

* When the machine is switched ON
* When the front door is opened and closed
* During a copy operation

2. Signals

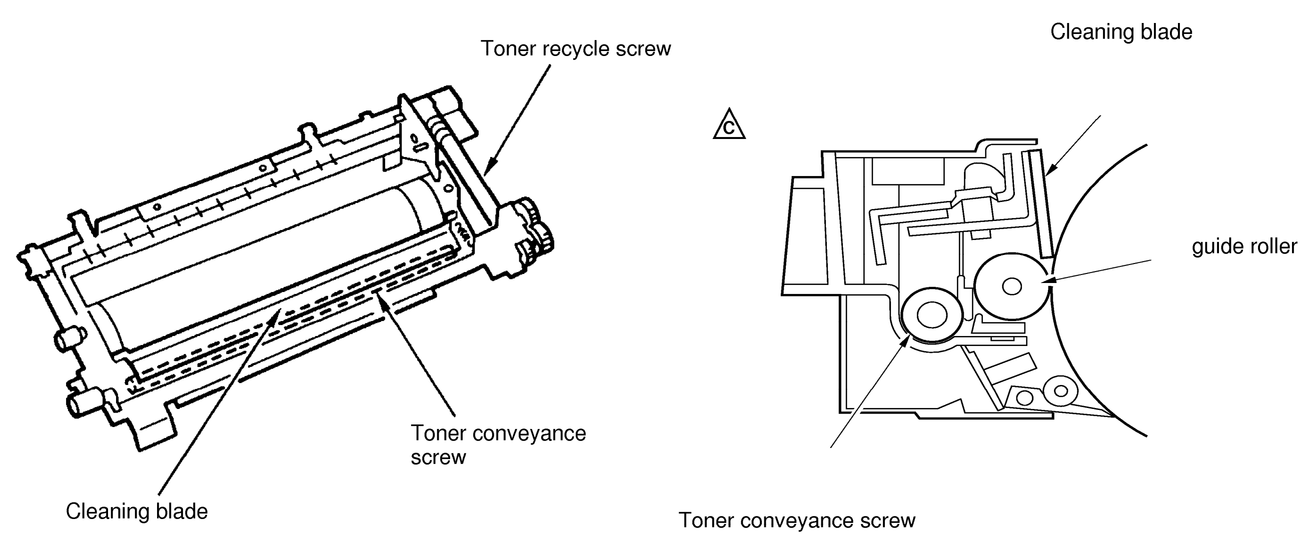
a. Input signal

(1) TLD (TLD → CB)

When the level of toner in the toner box becomes low, this signal becomes [L], and a message is displayed on the LCD connected to OB2.

CLEANING/TONER RECYCLE UNIT

[1] Composition



[2] Mechanisms

Mechanism	Method
Drum cleaning	Cleaning blade (weight type)
Toner recycle	Screw conveyance to the developing unit
Toner collection	Toner guide roller

[3] Disassembly and Re-assembly

1. Removing and Re-installing the Cleaning Blade

⚠ Caution: Be sure that the power cord has been unplugged from the power outlet.

Caution:

1. Do not touch the edge of the cleaning blade with bare hands.
2. When installing the drum, cleaning blade and guide roller, coat the entire surface of the drum and also the cleaning blade with setting powder, regardless of whether the drum and cleaning blade are new or old type parts. Also, apply toner to both edges of the cleaning blade.
3. Once the drum has been coated with setting powder, carry out the following work before installing the drum unit on the main body.
    1) To ensure that the toner density is correct, before installing the drum to the drum unit, discharge the surface of γ detection sensor and the Dmax sensor on the control board by using a piece of cloth moistened with alcohol, thus preventing toner from adhering to the sensors.
    2) After installing the drum to the drum unit, with the charging corona unit and the developing unit removed, insert the centering jigs into both sides of the drum, then turn the drum one revolution. This prevents setting powder from scattering onto the charging corona unit and also prevents image defects.
4. Take care that the blade spacer mounted on the cleaning blade shaft at the back does not drop out.

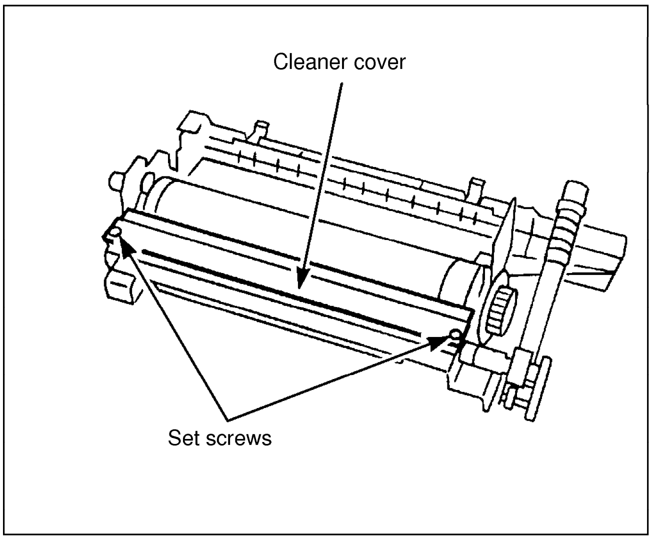
1) To ensure that the toner density is correct, before installing the drum to the drum unit, discharge the surface of γ detection sensor and the Dmax sensor on the control board by using a piece of cloth moistened with alcohol, this preventing toner from adhering to the sensors.

5. Pay attention not to drop the blade spacer which is inserted to cleaning blade atis on the back side.

Note: Before removing the drum, in order prevent the toner from dropping, rotate cleaner idler gear B/ counterclockwise and remove the toner remaing between the drum and the guide roller. If the toner cannot be removed, rotate the drum clockwise a bit, then detach the drum keeping the toner in the place.

a. Procedure

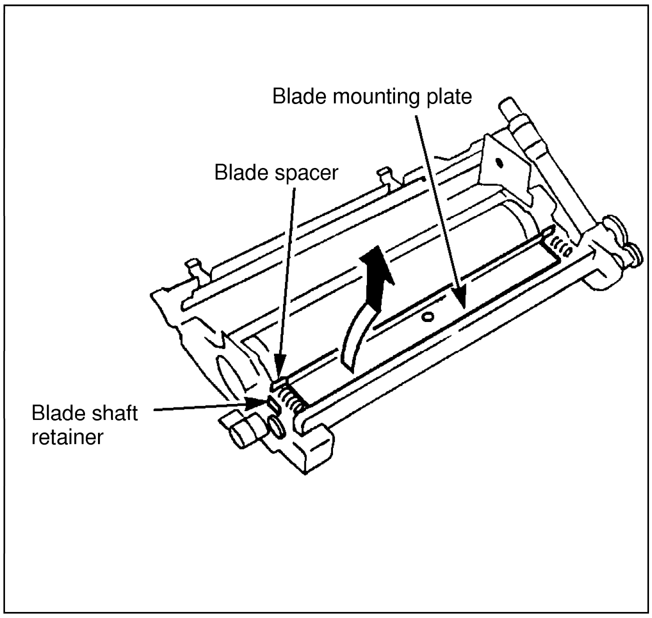
(1) Open the front door, then remove the drum unit.
(2) Remove the charging corona unit.
(3) Remove the two set screws, then remove the cleaner cover.


Cleaner cover
Set screws

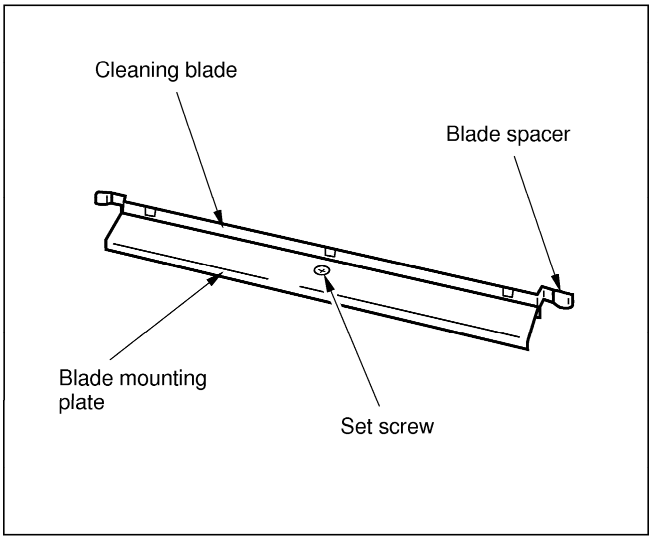
(4) Remove the blade shaft retainer.

Caution: Take care that the blade spacer does not drop out.

(5) Lift out the blade mounting plate.


Blade mounting plate
Blade spacer
Blade shaft retainer

(6) Remove the set screw, then remove the cleaning blade from the blade mounting plate.

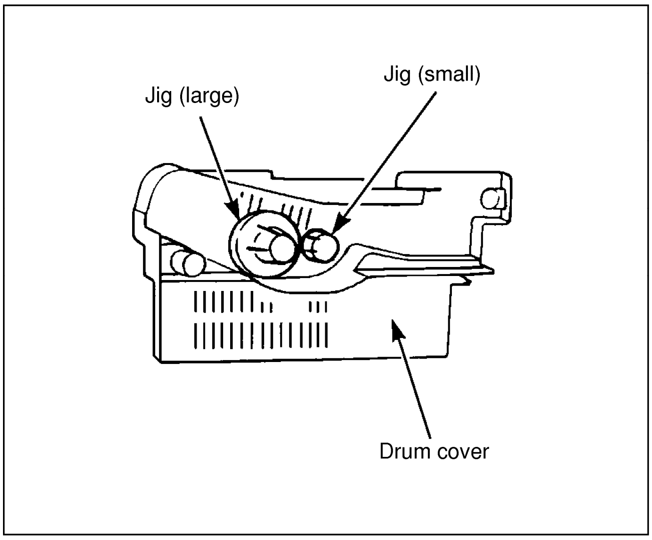

Cleaning blade
Blade spacer
Blade mounting plate
Set screw

(8) Re-install the cleaning blade in the opposite sequence to removal.

2. Removing and Re-installing the Guide Roller

Caution:

1. When installing the guide roller, it is necessary to set the drum accurately in the center position. When the drum used in this machine is removed, the drive shaft remains in the main body, hence it is necessary to center the drum using the two jigs inside the drum cover.



2. When installing the drum, cleaning blade and guide roller, coat the entire surface of the drum and also the cleaning blade with setting powder, regardless of whether the drum and cleaning blade are new or old type parts. Also, apply toner to both edges of the cleaning blade.
3. Once the drum has been coated with setting powder, carry out the following work before installing the drum unit on the main body.
   1) To ensure that the toner density is correct, before installing the drum to the drum unit, discharge the surface of γ detection sensor and the Dmax sensor on the control board by using a piece of cloth moistened with alcohol, thus preventing toner from adhering to the sensors.
   2) After installing the drum to the drum unit, with the charging corona unit and the developing unit removed, insert the centering jigs into both sides of the drum, then turn the drum one revolution. This prevents setting powder from scattering onto the charging corona unit and also prevents image defects.

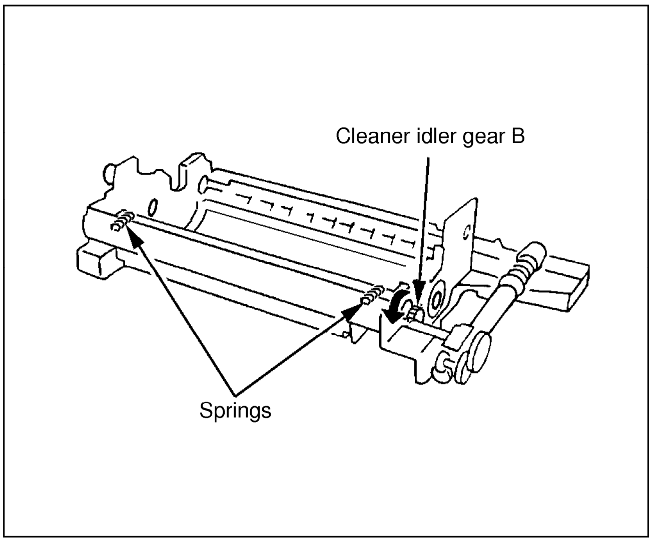
a. Procedure

(1) Remove the drum unit.

(2) Remove the charging corona unit, blade mounting plate, developing unit and drum from the drum unit.

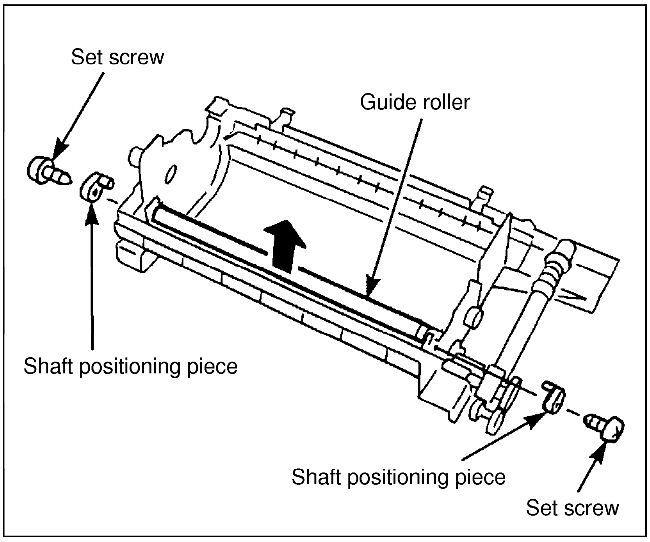
Note: Before removing the drum, rotate cleaner idler gear B counterclockwise in order to prevent toner from dropping to the bottom of the unit, and also remove any toner between the drum and the guide roller. If the toner cannot be removed, rotate the drum clockwise a bit, then detach the drum with keeping the toner in the place.

(3) Remove cleaner idler gear B and the two springs.



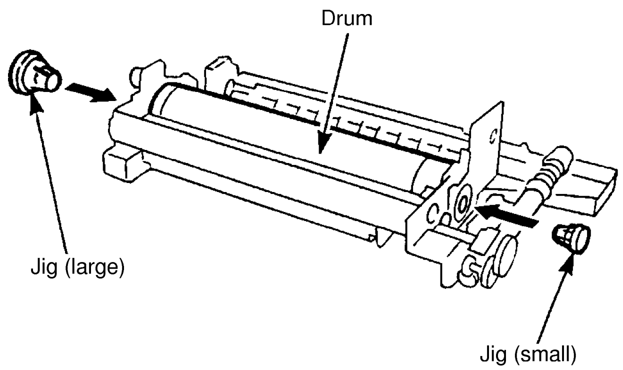
(4) Remove the left and right set screws (one each), then remove the left and right shaft positioning pieces.

(5) Lift out the guide roller.



(6) Clean any toner that has dropped off the guide roller.

(7) Install the guide roller and the two shaft positioning pieces, then fix them temporarily with the two set screws.



(8) Install the drum by following the instruction given in 1) of 3, then insert the centering jigs into both sides of the drum.

(9) Install the two springs, bring the guide roller into contact with the drum, then fix the guide roller securely by fully tightening the two screws that you fixed temporarily.

(10) Install the cleaning blade.(Refew to the dis-assembly and assembly of the cleaning blade in this manual.)

(11) Rotate the drum 1 revolution by follewing the instruction given in 2) of 3.

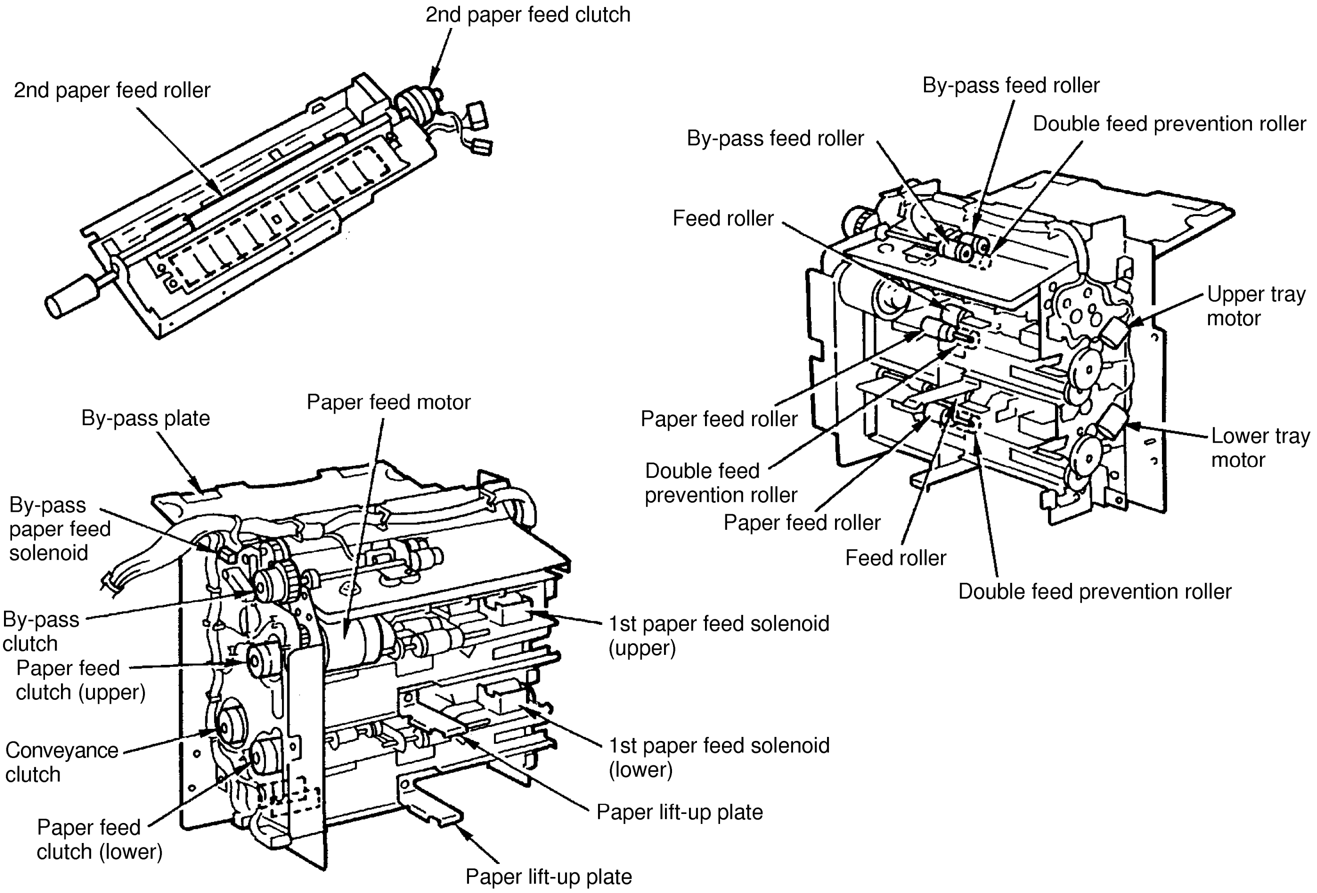
(12) Remove the centering jigs from both sides of the drum, then store them inside the drum cover.

(13) Install the charging corona unit and developing unit.

(14) Install the drum unit to the main body.

PAPER FEED UNIT

[1] Composition


2nd paper feed clutch
2nd paper feed roller
By-pass feed roller
Double feed prevention roller
By-pass feed roller
Feed roller
Upper tray motor
Paper feed roller
Lower tray motor
Double feed prevention roller
Paper feed roller
Feed roller
Double feed prevention roller
By-pass plate
Paper feed motor
By-pass paper feed solenoid
By-pass clutch
Paper feed clutch (upper)
1st paper feed solenoid (upper)
Conveyance clutch
1st paper feed solenoid (lower)
Paper feed clutch (lower)
Paper lift-up plate
Paper lift-up plate

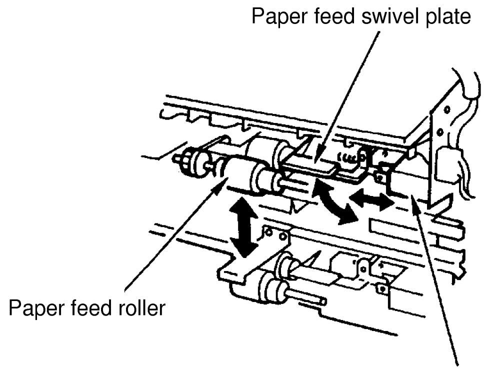
[2] Mechanisms

	Mechanism	Method
	Paper stack	Tray (2-stage)
*1	Paper lift pressure reduction	Swivel roller
*2	Paper lift-up	Paper lift-up plate
	Double feed prevention	Torque limiter
*3	Cassette loading	Front loading
	1st paper feed	Feed roller, 1st paper feed solenoid

	Mechanism	Method
	2nd paper feed	Registration roller, 2nd paper feed clutch
	Multi tray paper feed	Feed roller, by-pass paper feed solenoid
*4	Paper size detection	Cassette detection switch (upper cassette: tact switch, (lower cassette: Write paper size to memory.)
*5	Remaining paper indication	Index sheet

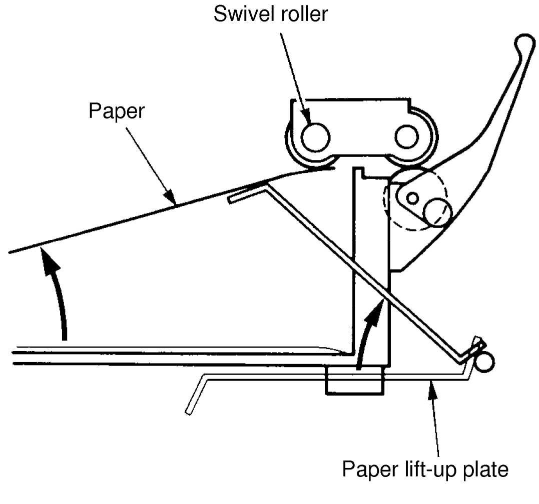
*1: Swivel roller

The paper feed direction and the cassette loading direction are at right angles to each other. Consequently, if the feed roller is fixed, it will touch the paper when the cassette is removed, resulting in possible paper jamming. To prevent this, the swivel roller (paper feed roller) is designed so that it drops down and touches the paper only when paper feed is taking place.


Paper feed swivel plate
Paper feed roller
Paper feed solenoid

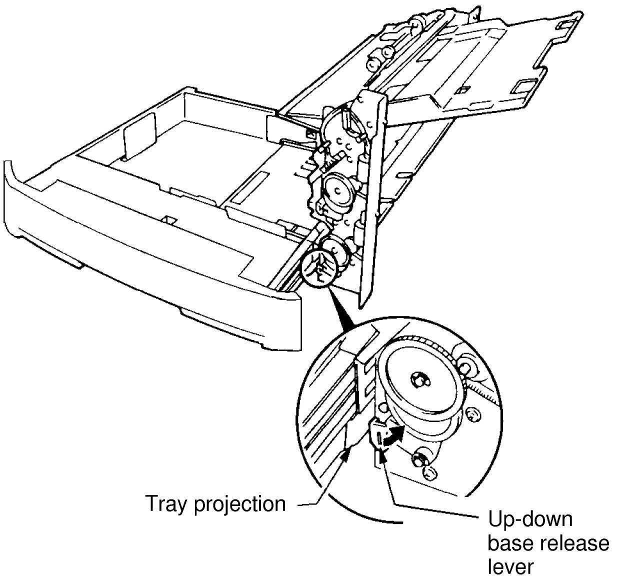
*2: Paper lift-up

When the paper feed tray is installed, the paper lift-up plate is moved by the tray motor, paper feed idler gear and the paper lift-up gear, causing the paper in the tray to be fed automatically to the paper feed position.


Swivel roller
Paper
Paper lift-up plate

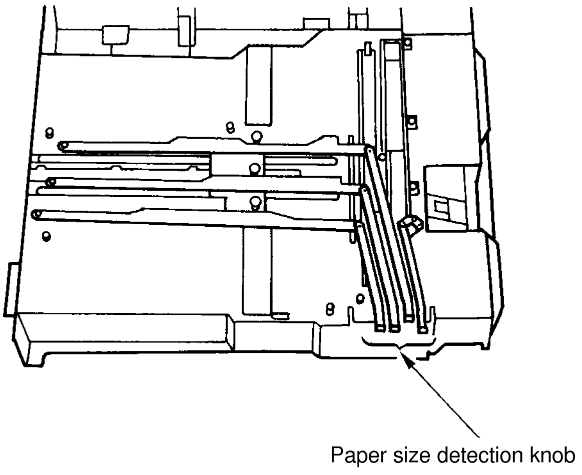
*3: Paper up-down base release operation

When the tray is being removed, the projection on the right side of the tray strikes the paper up-down base release lever, causing the paper lift-up gear to be disengaged by the gear coupling lever. As a result, the up-down base falls under its own weight.


Tray projection
Up-down base release lever

*4: Paper size detection

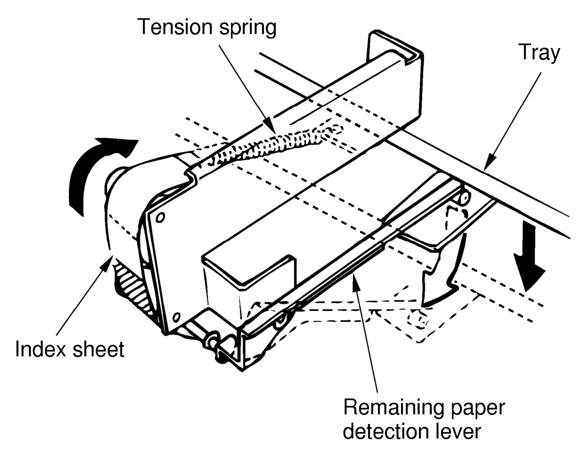
The side guide and rear guide of the upper tray move, causing the paper size detection knob to move as well. As a result, the switch on the detection board is turned ON/OFF. In this way, paper size detection takes place automatically.


Paper size detection knob

*5: Remaining paper indication

The amount of paper remaining in the tray can be checked roughly by looking through the remaining paper indicator window.

The remaining paper detection lever moves along with the up-down motion of the tray, and the index sheet is caused to slide by a tension spring.


Tension spring
Tray
Index sheet
Remaining paper detection lever

[3] Disassembly and Re-assembly

1. Removing and Re-installing the Paper Feed Unit

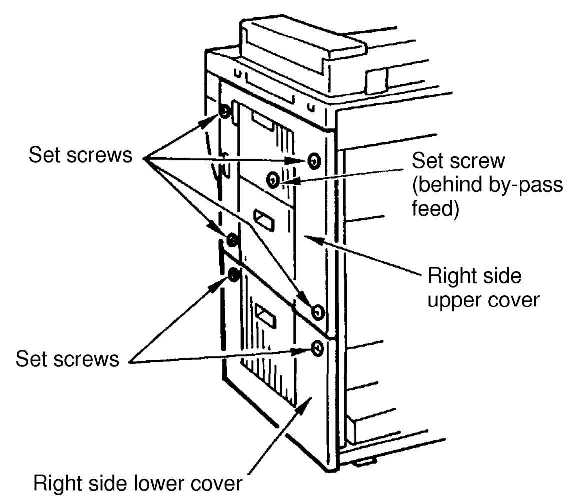
⚠ **Caution: Be sure that the power cord has been unplugged from the power outlet.**

a. Procedure

(1) Open the front door, then pull out the upper/lower tray in the forward direction.

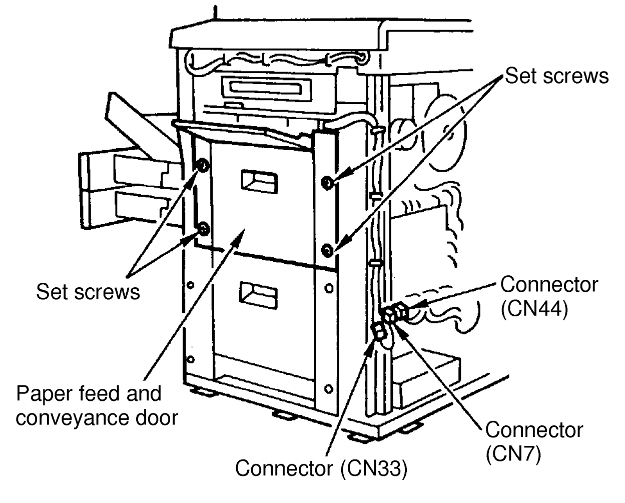
(2) Slacken the five set screws, then remove the right side upper cover.

(3) Slacken the two screws, then remove the right side lower cover.


Set screws
Set screw (behind by-pass feed)
Right side upper cover
Set screws
Right side lower cover

(4) Disconnect the two connectors (CN7 and CN44) connected to the control board, and also the intermediate connector (CN33), then remove the paper feed wiring from the cord clamp.

(5) Remove the four set screws, then remove the paper feed unit.


Set screws
Set screws
Connector (CN44)
Paper feed and conveyance door
Connector (CN7)
Connector (CN33)

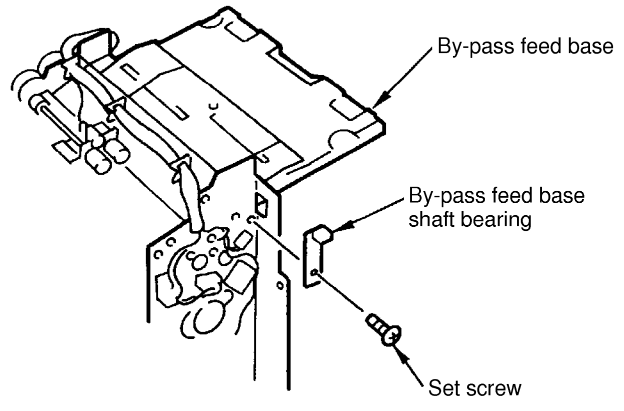
(6) Re-install the paper feed unit in the opposite sequence to removal.

2. Removing and Re-installing the By-pass Feed Base

a. Procedure

(1) Remove the paper feed unit.

(2) Remove the set screw and by-pass feed base shaft bearing, then remove the by-pass feed base.


By-pass feed base
By-pass feed base shaft bearing
Set screw

(3) Re-install the by-pass feed base in the opposite sequence to removal.

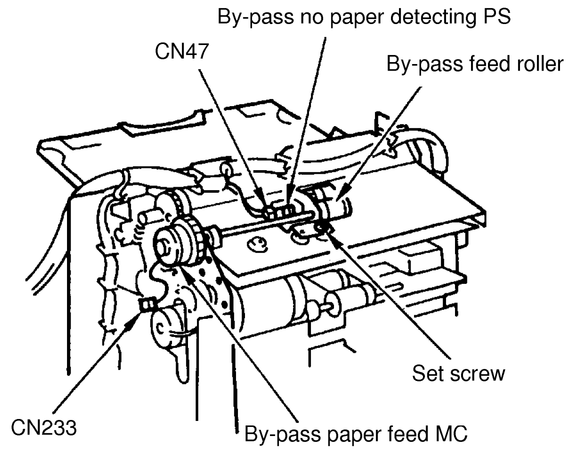
3. Replacing the Rubber of the By-pass Feed Roller/By-pass Paper Feed Roller

a. Procedure

(1) Remove the paper feed unit.

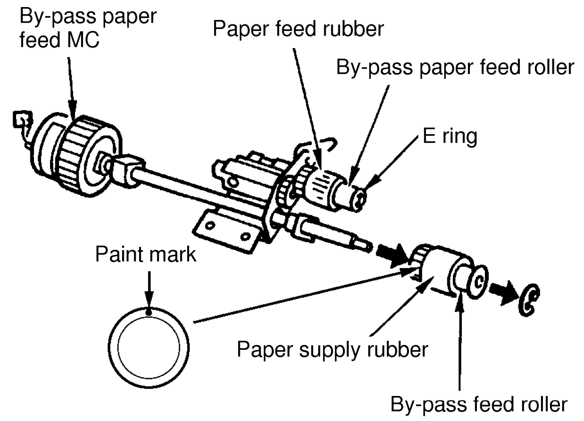
(2) Disconnect the connectors of the by-pass paper feed MC and the by-pass no paper detecting PS (CN233 and 47).

(3) Remove the set screw, then remove the by-pass paper feed unit.


By-pass no paper detecting PS
CN47
By-pass feed roller
Set screw
CN233
By-pass paper feed MC

(4) Remove the each E ring, then pull out each roller from the shaft.

(5) Remove the rubber from each roller (paper feed rubber and paper supply rubber).


By-pass paper feed MC
Paper feed rubber
By-pass paper feed roller
E ring
Paint mark
Paper supply rubber
By-pass feed roller

(6) Re-install each rubber in the opposite sequence to removal. (Be careful of the direction of the paint mark on each rubber.)

4. Replacing the rubber (paper supply rubber) of the by-pass feed double feed prevention roller

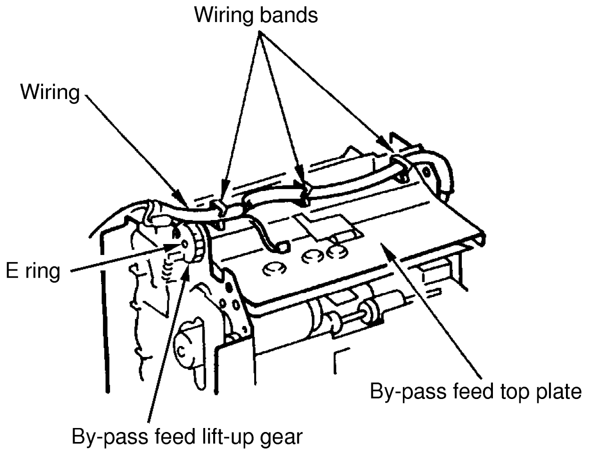
a. Procedure

(1) Remove the by-pass paper feed unit.

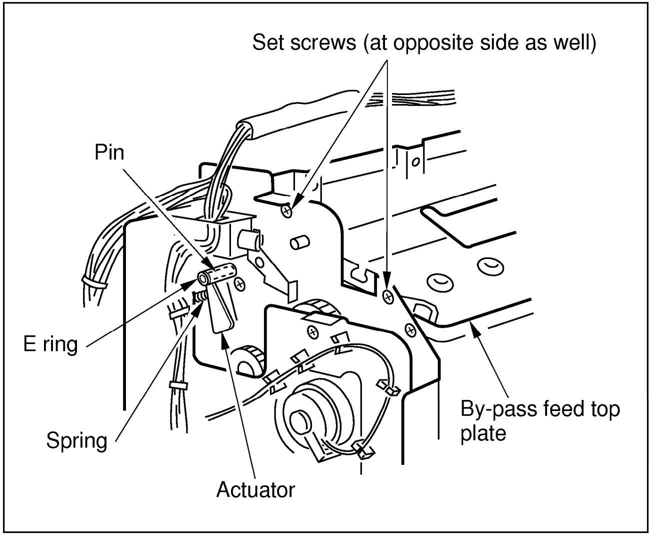
(2) Remove the by-pass feed base.

(3) Cut the three wiring bands so as to free the wiring.

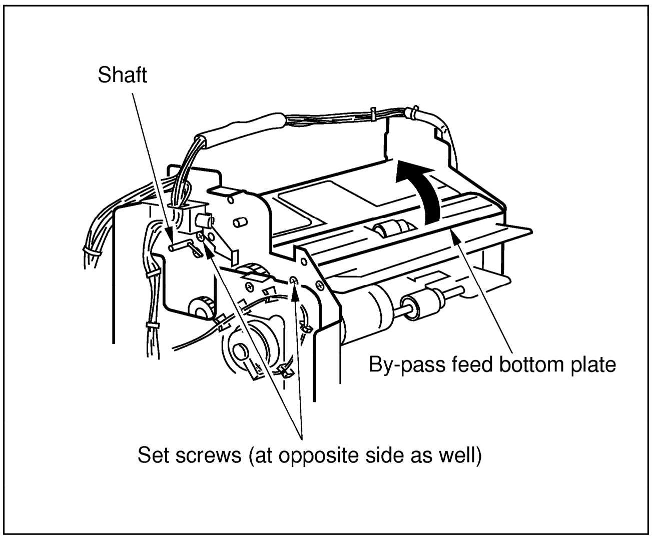
(4) Remove the E ring, then remove the by-pass feed lift-up gear.


Wiring bands
Wiring
E ring
By-pass feed top plate
By-pass feed lift-up gear

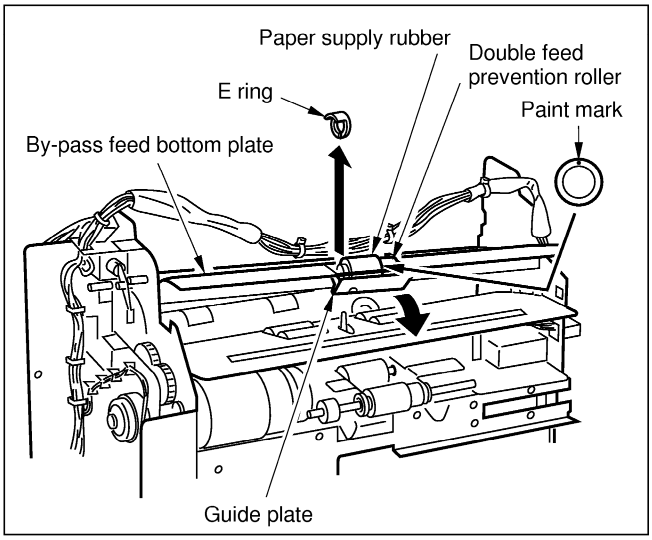
(5) Remove the spring, then remove the E ring, and remove the actuator.
(6) Pull out the pin.
(7) Remove the four set screws, then remove the by-pass feed top plate.


Set screws (at opposite side as well)
Pin
E ring
Spring
Actuator
By-pass feed top plate

(8) Remove the four set screws, then free the by-pass feed bottom plate.
(9) Lift the by-pass feed bottom plate using the shaft side as a pivot.


Shaft
By-pass feed bottom plate
Set screws (at opposite side as well)

(10) Remove the E ring.
(11) Open the guide plate to the bottom, then remove the double feed prevention roller.
(12) Remove the paper supply rubber from the double feed prevention roller.

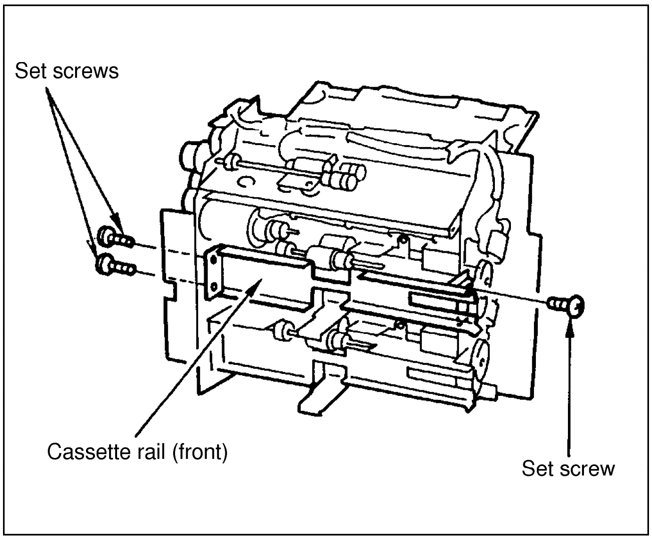

Paper supply rubber
Double feed prevention roller
E ring
Paint mark
By-pass feed bottom plate
Guide plate

(13) Re-install the by-pass double feed prevention roller rubber. (Be careful of the direction of the paint mark on the rubber.)

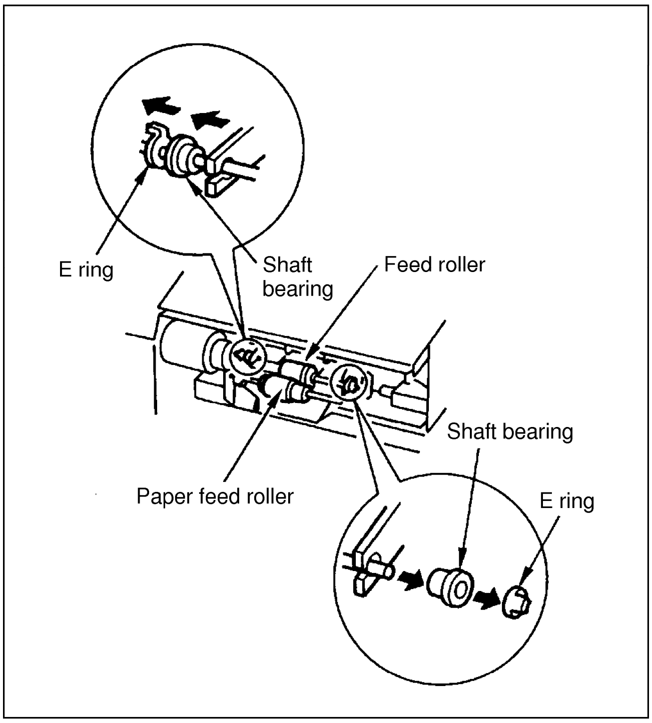
5. Replacing the Rubber of the Upper Paper Feed Roller and the Feed Roller

a. Procedure

(1) Remove the paper feed unit.
(2) Remove the three set screws, then remove the upper cassette rail (front).

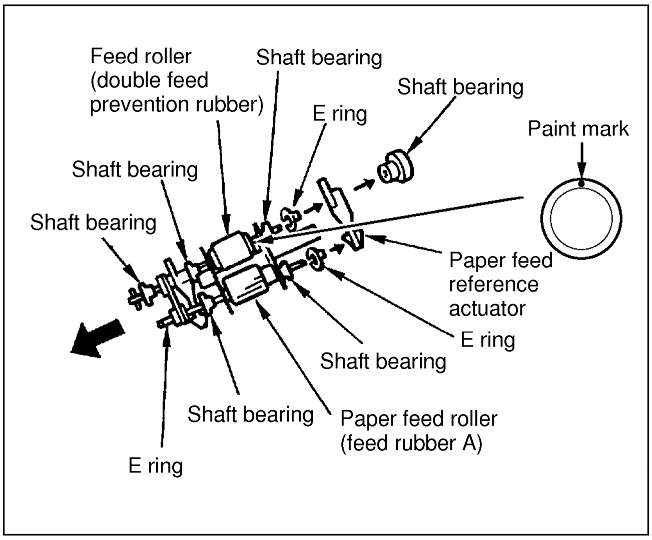

Set screws
Cassette rail (front)
Set screw

(3) Remove the two E rings, then shift the left and right shaft bearings to the outside, and remove the upper stage 1st paper feed roller unit.


E ring
Shaft bearing
Feed roller
Shaft bearing
Paper feed roller
E ring

(4) Pull out the three E rings, the three shaft bearings, the paper feed reference actuator and the two shafts of the paper feed roller unit, then remove each roller.

(5) Remove the rubber from each roller (feed rubber A and the double feed prevention rubber).


Feed roller (double feed prevention rubber)
Shaft bearing
Shaft bearing
E ring
Paint mark
Shaft bearing
Shaft bearing
Paper feed reference actuator
E ring
Shaft bearing
Shaft bearing
Paper feed roller (feed rubber A)
E ring

(6) Re-install the rubber in the opposite sequence to removal. (Be careful of the direction of the paint mark on each rubber.)

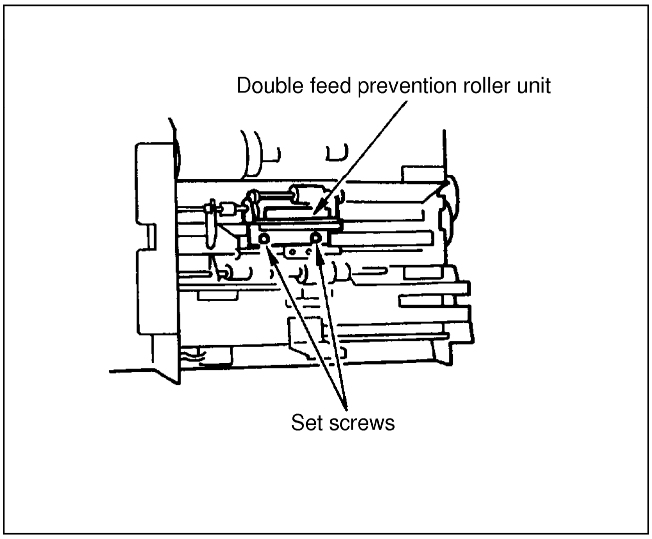
6. Replacing the Rubber of the Upper Stage Paper Feed Double Feed Prevention Roller (double feed prevention rubber)

a. Procedure

(1) Remove the paper feed unit.

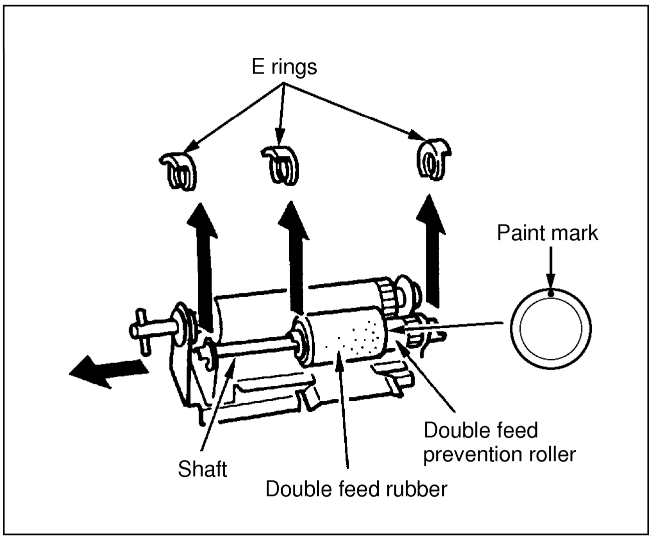
(2) Remove the upper cassette rail (front).

(3) Remove the two set screws, then remove the double feed prevention roller unit.


Double feed prevention roller unit
Set screws

(4) Remove the three E rings, then pull out the shaft and remove the double feed prevention roller.

(5) Remove the double feed prevention rubber from the double feed prevention roller.


E rings
Paint mark
Shaft
Double feed rubber
Double feed prevention roller

(6) Re-install the rubber in the opposite sequence to removal. (Be careful of the direction of the paint mark on the rubber.)

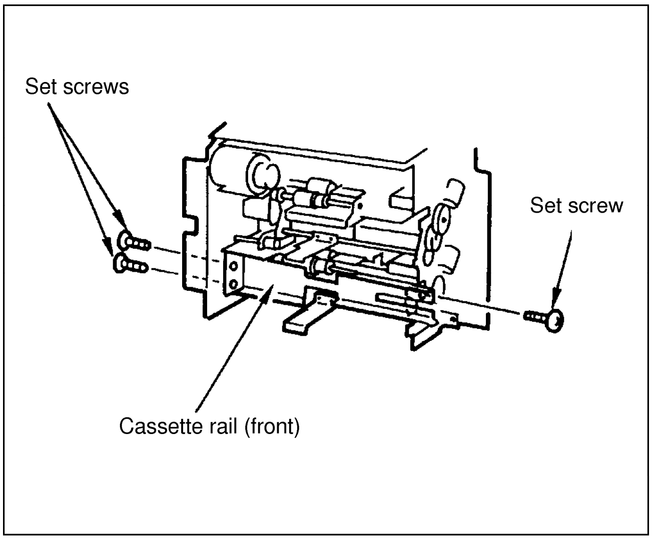
7. Replacing the Rubber for the Lower Paper Feed Roller and the Feed Roller

a. Procedure

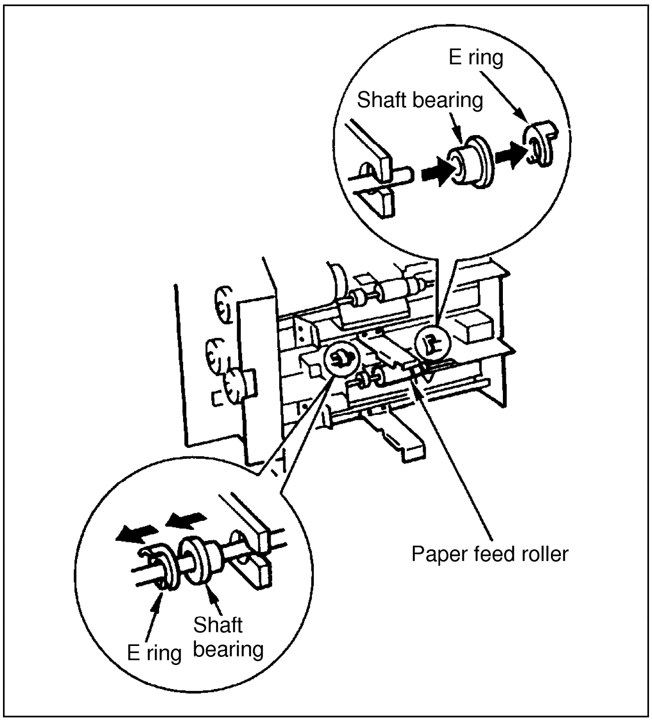
(1) Remove the paper feed unit.

(2) Remove the upper cassette rail (front).

(3) Remove the three set screws, then remove the lower cassette rail (front).

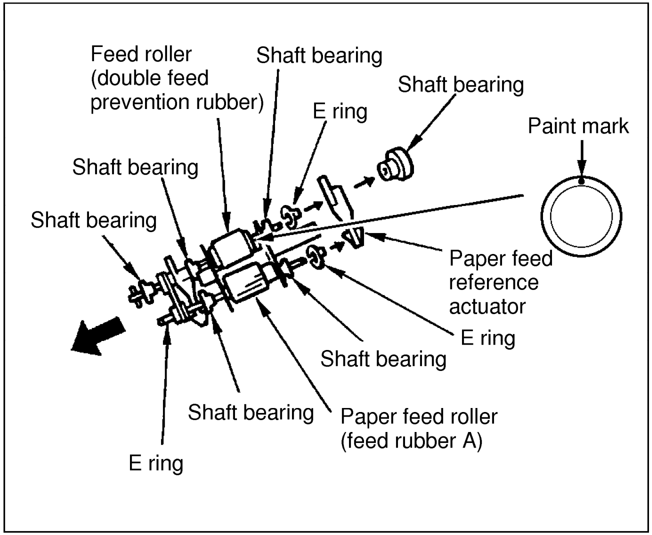

Set screws
Set screw
Cassette rail (front)

(4) Remove the two E rings, then shift the left and right shaft bearings to the outside, and remove the lower stage 1st paper feed roller unit.


E ring
Shaft bearing
Paper feed roller
Shaft bearing
E ring

(5) Pull out the three E rings, the three shaft bearings, the paper feed reference actuator and the two shafts of the paper feed roller unit, then remove each roller.

(6) Remove the rubber from each roller (feed rubber A and the double feed prevention rubber).


Feed roller (double feed prevention rubber)
Shaft bearing
Shaft bearing
E ring
Paint mark
Shaft bearing
Shaft bearing
Paper feed reference actuator
E ring
Shaft bearing
Shaft bearing
Paper feed roller (feed rubber A)
E ring

(7) Re-install the rubber in the opposite sequence to removal. (Be careful of the direction of the paint mark on each rubber.)

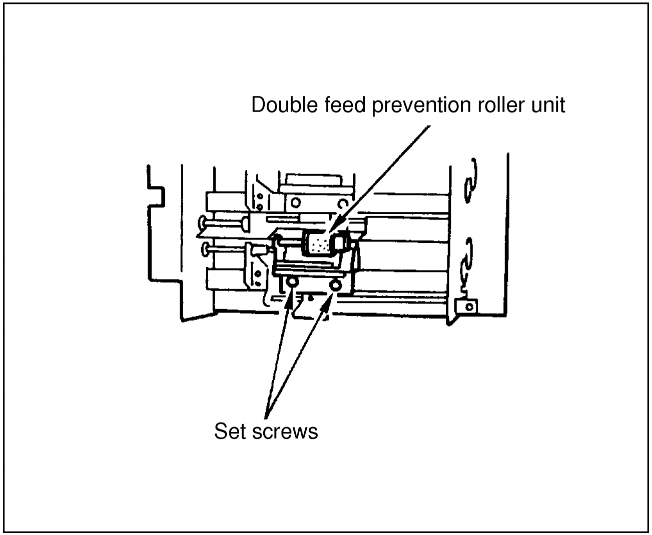
8. Replacing the Lower Stage Paper Feed Double Feed Prevention Roller (double feed prevention rubber)

a. Procedure

(1) Remove the paper feed unit.

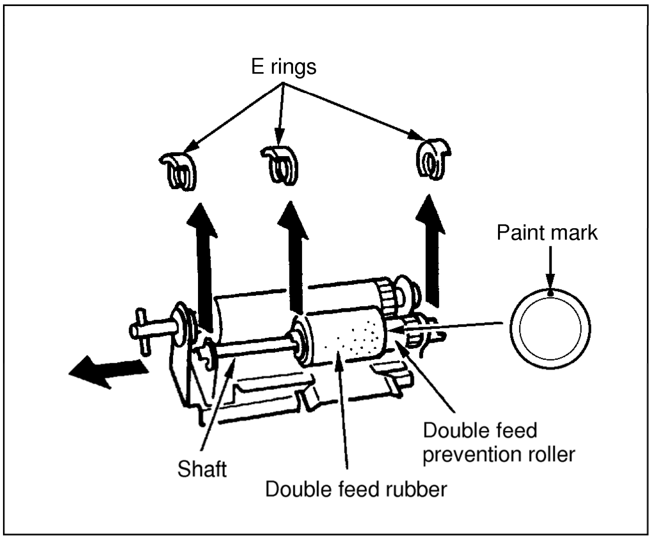
(2) Remove the upper and lower cassette rails (front).

(3) Remove the two set screws, then remove the double feed prevention roller unit.


Double feed prevention roller unit
Set screws

(4) Remove the three E rings, then pull out the shaft and remove the double feed prevention roller.

(5) Remove the double feed prevention rubber from the double feed prevention roller.


E rings
Paint mark
Double feed prevention roller
Shaft
Double feed rubber

(6) Re-install the rubber in the opposite sequence to removal. (Be careful of the direction of the paint mark on the rubber.)

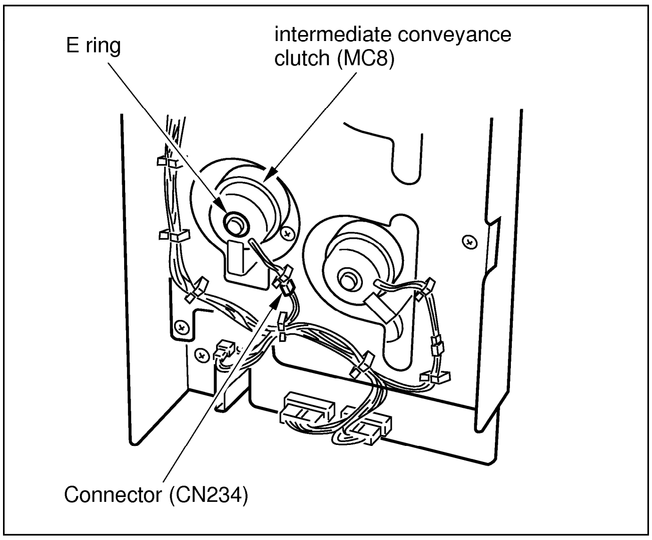
9. Replacing the intermediate conveyance clutch

a. Procedure

(1) Remove the paper feed unit.

(2) Disconnect the connector (CN234).

(3) Remove the E ring, then remove the intermediate conveyance clutch (MC8).


E ring
intermediate conveyance clutch (MC8)
Connector (CN234)

(4) Re-install the intermediate conveyance clutch in the opposite sequence to removal. (Do not forget to insert the pin inside of clutch.)

10. Removing and Re-installing the 2nd Paper Feed Unit

⚠ **Caution: Be sure that the power cord has been unplugged from the power outlet.**

a. Procedure

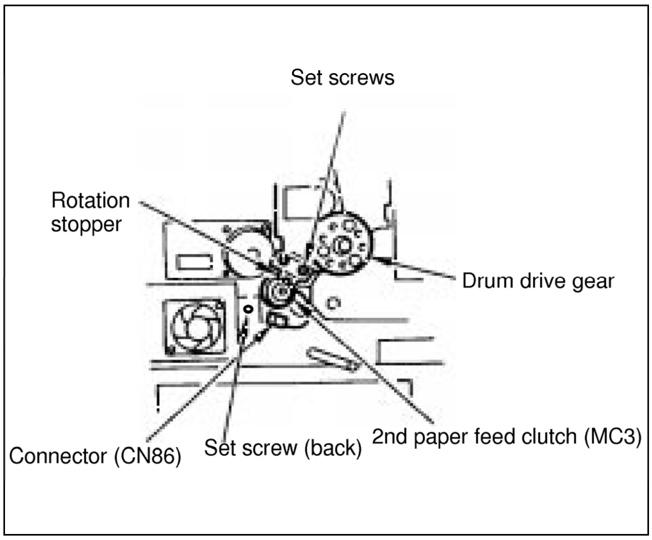
(1) Remove the drum unit, transfer/separation unit, and paper feed unit.

(2) Remove the flywheel.

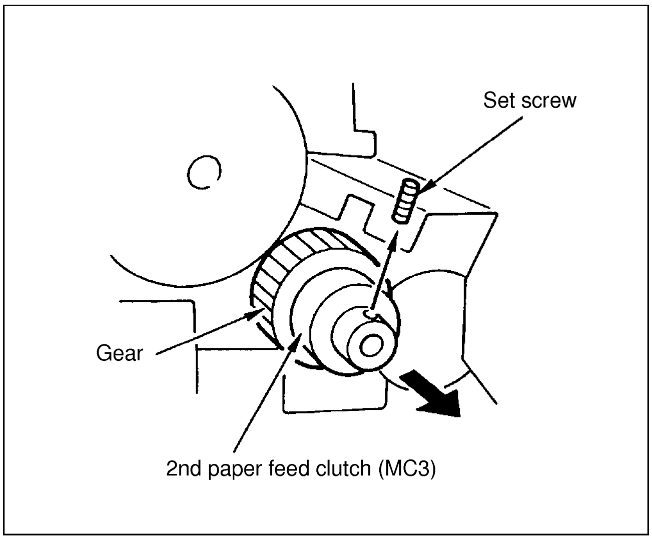
(3) Disconnect the connector (CN86).

(4) Remove the 1set screw, then remove the rotation stopper of the 2nd paper feed clutch (MC3).

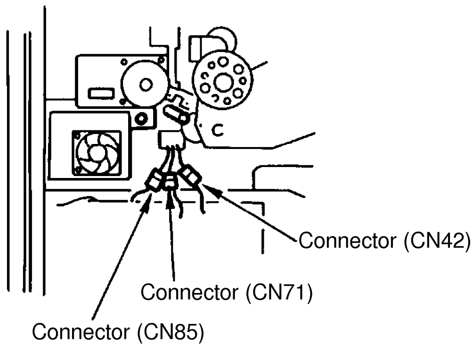
Caution: DO NOT touch the drum drive gear with a screwdriver when removing the set screws.


Set screws
Rotation stopper
Drum drive gear
Connector (CN86)
Set screw (back)
2nd paper feed clutch (MC3)

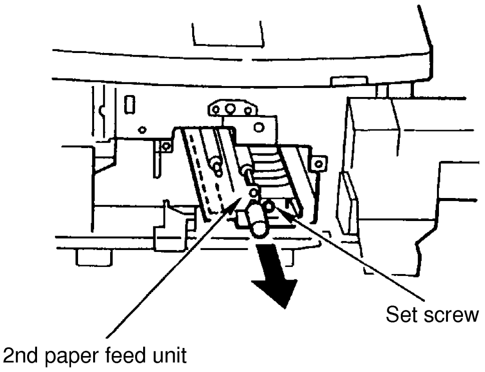
(5) Slacken the set screw, then remove the 2nd paper feed clutch and the gear.(Clutch and gear are one-part.)


Set screw
Gear
2nd paper feed clutch (MC3)

(6) Remove the three intermediate connectors (CN42, 71 and 85).


Connector (CN42)
Connector (CN71)
Connector (CN85)

(7) Remove the two set screws on the front and back, then pull out and remove the 2nd paper feed unit.

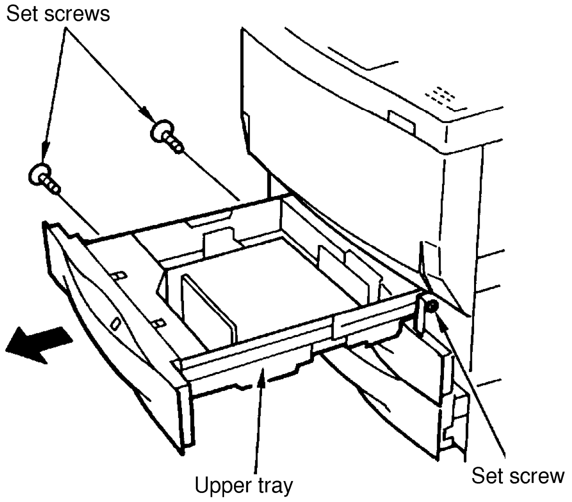

Set screw
2nd paper feed unit

(8) Re-install the 2nd paper feed unit in the opposite sequence to removal.

11. Removing and Re-installing the Upper Tray

a. Procedure

(1) Withdraw the upper tray, then remove the three set screws.
(2) Withdraw the upper tray further, then lift it out.

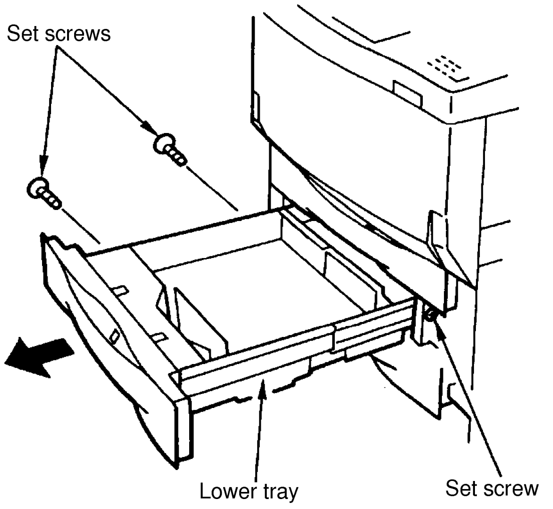

Set screws
Upper tray
Set screw

(3) Re-install the upper tray in the opposite sequence to removal.

12. Removing and Re-installing the Lower Tray

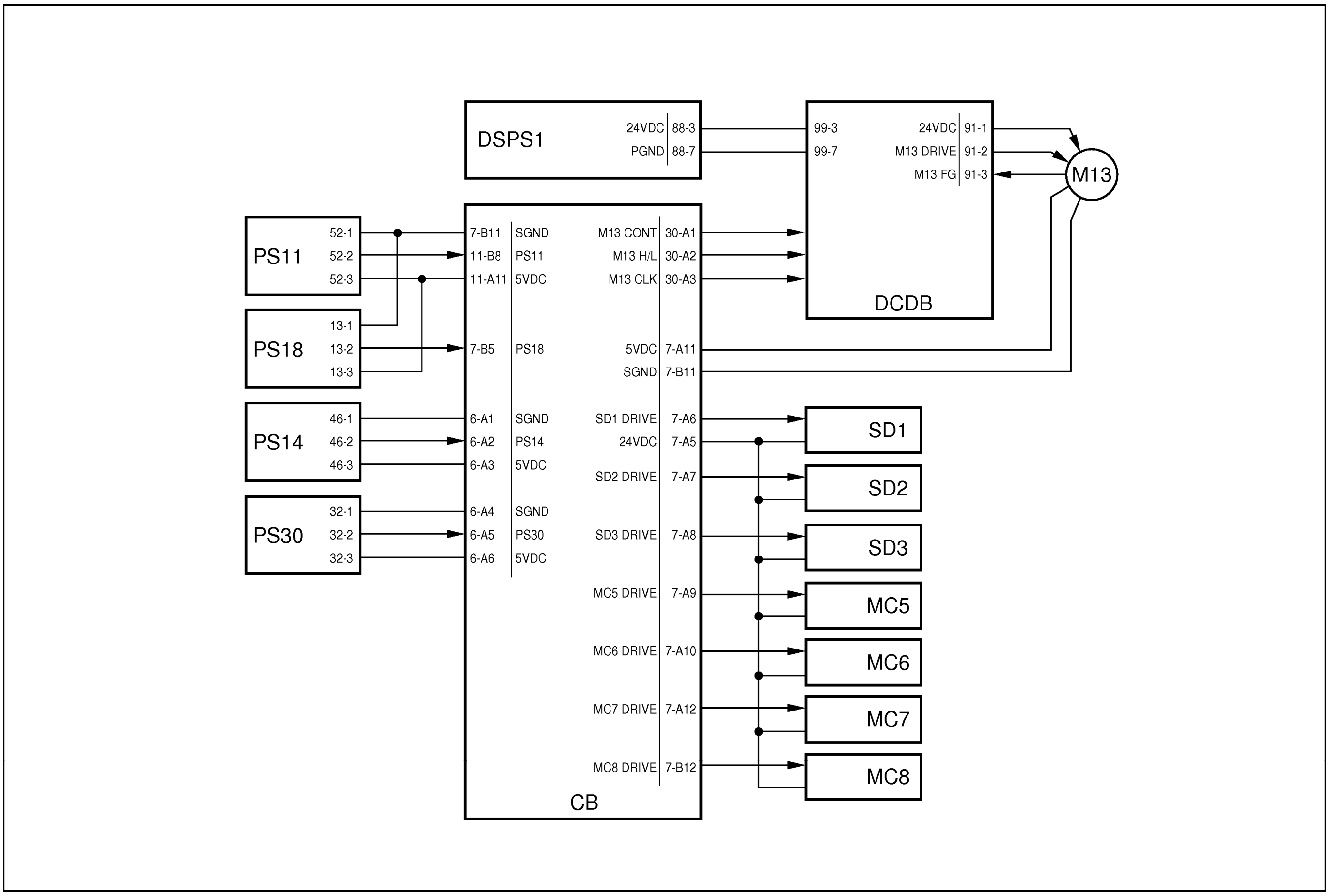
a. Procedure

(1) Withdraw the lower tray, then remove the three set screws.
(2) Withdraw the lower tray further, then lift it out.


Set screws
Lower tray
Set screw

(3) Re-install the upper tray in the opposite sequence to removal.

[4] Paper Feed Control


DSPS1
24VDC 88-3
PGND 88-7
99-3
99-7
24VDC 91-1
M13 DRIVE 91-2
M13 FG 91-3
M13
DCDB
PS11
52-1
52-2
52-3
PS18
13-1
13-2
13-3
PS14
46-1
46-2
46-3
PS30
32-1
32-2
32-3
7-B11 SGND
11-B8 PS11
11-A11 5VDC
7-B5 PS18
6-A1 SGND
6-A2 PS14
6-A3 5VDC
6-A4 SGND
6-A5 PS30
6-A6 5VDC
M13 CONT 30-A1
M13 H/L 30-A2
M13 CLK 30-A3
5VDC 7-A11
SGND 7-B11
SD1 DRIVE 7-A6
24VDC 7-A5
SD2 DRIVE 7-A7
SD3 DRIVE 7-A8
MC5 DRIVE 7-A9
MC6 DRIVE 7-A10
MC7 DRIVE 7-A12
MC8 DRIVE 7-B12
CB
SD1
SD2
SD3
MC5
MC6
MC7
MC8

The 1st paper feed takes place as a result of the transmission of drive force from M13 (paper feed) via MC5 (1st paper feed (upper)), MC6 (1st paper feed (lower)) and MC7 (by-pass paper feed) to the respective paper feed rollers. At this time, the paper feed rollers are not touching the paper, hence the swivel roller and the by-pass plate are moved up and down by SD1 (1st paper feed (upper), SD2 (1st paper feed (lower)) and SD3 (by-pass paper feed), causing each roller to touch the paper. Control of each roller is done by the CB (control board). The 2nd paper feed is done by MC3. Related signals are PS11 (conveyance door), PS14 (registration), PS18 (no feed), PS19 (optics sync), PS20 (pre-feed (upper)), PS21 (pre-feed (lower)) and PS30 (by-pass).

1. Operation

a. 1st paper feed operation timing

(1) 1st copy start
Timing that is determined by the P counter from when the charging corona unit goes ON

(2) 2nd copy start
After the specified period from when PS14 (registration) goes ON for the 1st copy

(3) OFF timing
Specified count on the P counter

b. Intermediate conveyance control

The paper fed from the upper and lower trays is conveyed by the rotational power of M13 to the 2nd paper feed section by MC8 (conveyance). This conveyance section is also used for feeding paper from the ADU and LCT. However, it not used for by-pass paper feed.

(1) MC8 ON timing
When PS20 or PS21 is ON

(2) MC8 OFF timing
After the specified period from when PS20 or PS21 goes OFF.

c. 2nd paper feed control

The paper conveyed to the 2nd paper feed section stops after the specified period from when PS14 goes ON (loop formation).

(1) MC3 ON timing

1) Direct exposure scan copying
(When superfine mode is selected)
(1st copy in either normal or fine mode with platem mode or RADF(1-1)mode.)
After the specified period from when PS4 (paper feed restart) goes ON

2) Copying in the E-RDH mode
(2nd and subsequent copies in either normal or fine mode with platen mode or RADF(1-1))
(All copies in RADF(1-2,2-1,2-2)mode)
After the specified period from when PS18 goes ON, or after the specified period from when MC7 (by-pass paper feed) goes ON

2. Signals

a. Input signals

(1) PS11 (PS11 → CB)
Conveyance door open/close detection signal
[L]: Door is closed
[H]: Door is open

(2) PS18 (PS18 → CB)
When the tray, LCT or ADU is used, the image data from the E-RDH determines the laser write timing. Laser write starts after the specified period from when PS18 goes ON.
Also, during LCT or ADU paper feed, when the paper turns PS19 (optics sync) ON, the CB checks the ON or OFF state of PS18, and if PS18 was turned ON by the previous sheet of paper, the CB stops the paper momentarily at the predetermined position after PS19 ON. After the paper has passed PS18, paper feed restarts.
[L]: Paper is detected
[H]: Paper is not detected

(3) PS14 (PS14 → CB)
Paper detection signal used for detecting the paper feed temporary stop position
PS14 goes ON and outputs [L] when paper is detected at the paper feed temporary stop position.

(4) PS30 (PS30 → CB)
Jam detection sensor
[L]: Paper is detected
[H]: Paper is not detected

(5) PS20/21 (PS21/21 → CB)
Sensor which determines the operation timing of MC8 (conveyance CL) (paper is conveyed as far the 2nd paper feed section)
MC8 goes ON when PS20 or PS21 is ON.

(6) PS19 (PS19 → CB)
During continuous paper feed from the LCT/ADU, the CB checks the state of PS18 (no feed) when the paper reaches the specified position past PS19, and if the previous sheet of paper is still at PS18, the CB temporarily stops paper feed.
Paper feed restarts after the trailing edge of the previously fed paper has passed PS18 (no feed).

(7) M13 FB (M13 → DCDB)
This is a feedback signal from the rotational speed sensor contained in M13. This signal is compared with the M13 CLK signal input from the CB, and the difference used to control the rotational speed of M13.

b. Output signals

(1) SD1 DRIVE (CB → SD1)
SD1 drive control signal
[L]: SD1 ON
[H]: SD1 OFF

(2) SD2 DRIVE (CB → SD2)
SD2 drive control signal
[L]: SD2 ON
[H]: SD2 OFF

(3) SD3 DRIVE (CB → SD3)
SD3 drive control signal
[L]: SD3 ON
[H]: SD3 OFF

(4) MC5 DRIVE (CB → MC5)
MC5 drive control signal
[L]: MC5 ON
[H]: MC5 OFF

(5) MC6 DRIVE (CB → MC6)
MC6 drive control signal
[L]: MC6 ON
[H]: MC6 OFF

(6) MC7 DRIVE (CB → MC7)
MC7 drive control signal
[L]: MC7 ON
[H]: MC7 OFF

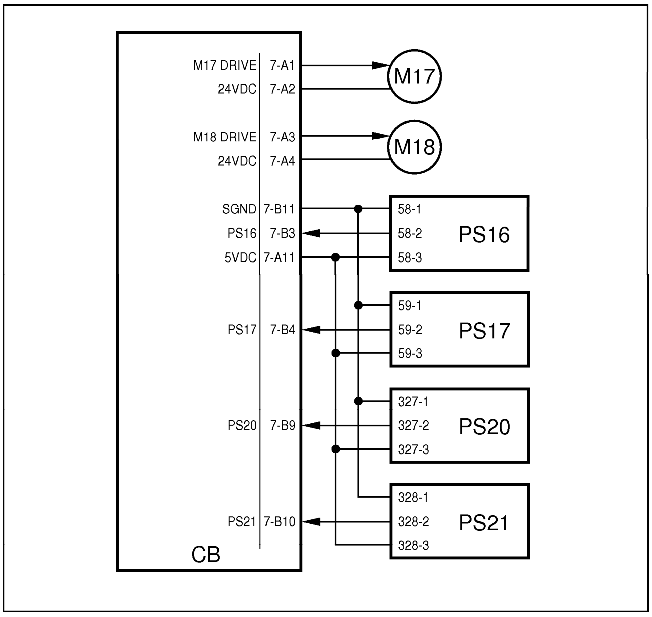
(7) MC8 DRIVE (CB → MC8)
MC8 drive control signal
[L]: MC8 ON
[H]: MC8 OFF

(8) M13 DRIVE (DCDB → M3)
Power supply line to M13

(9) M13 CONT (CB → DCDB)
M13 ON/OFF control signal
[L]: M13 ON
[H]: M13 OFF

(10) M13 CLK (CB → DCDB)
M13 rotational speed control reference clock signal

[5] Paper Up-down Control


M17 DRIVE 7-A1
24VDC 7-A2
M17
M18 DRIVE 7-A3
24VDC 7-A4
M18
SGND 7-B11
PS16 7-B3
5VDC 7-A11
58-1
58-2
58-3
PS16
59-1
PS17 7-B4
59-2
59-3
PS17
327-1
PS20 7-B9
327-2
327-3
PS20
328-1
PS21 7-B10
328-2
328-3
PS21
CB

When a paper feed tray is loaded, M17 (upper tray) or M18 (lower tray) goes ON for a fixed period, raising the bottom plate in the tray.
Related signals are PS16 (upper tray upper limit detection), PS17 (lower tray upper limit detection), PS20 (upper tray set detection) and PS21 (lower tray set detection).

1. Operation

a. ON timing

M17 or M18 is turned ON by the paper size detecting sensor.

b. ON timing

M17 or M18 is turned OFF by PS16 or PS17 going ON.

2. Signals

a. Input signals

(1) PS16 (PS16 → CB)
Upper tray upper limit detection signal
The paper in the upper tray is raised by M17, and when it reaches the upper limit position this signal becomes [L].

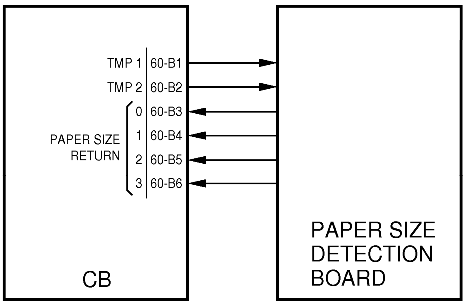
(2) PS17 (PS17 → CB)
Lower tray upper limit detection signal
The paper in the upper tray is raised by M18, and when it reaches the upper limit position this signal becomes [L].

b. Output signals

(1) M17 DRIVE (CB → M17)
M17 drive control signal
[L]: M17 ON
[H]: M17 OFF

(2) M18 DRIVE (CB → M18)
M18 drive control signal
[L]: M18 ON
[H]: M18 OFF

[6] Paper Size Detection Control



The size of the paper in the upper tray is detected as a result of the matrix circuit in the CB (control board) detecting the signal from the paper size detection board.

1. Operation

a. Tray (upper) paper size detection

The paper size detection board has four switches which detect the position of the rear guide in the tray (upper). The paper size is detected according to the particular ON-OFF combination of these switches.

The relation between the state of the switches on the paper size detection board and the paper size is shown below.

Paper size	A	B	C	D
A3	OFF	OFF	OFF	ON
B4	ON	OFF	OFF	ON
A4	OFF	ON	OFF	ON
B5	OFF	ON	ON	OFF
B6	OFF	OFF	ON	OFF
A4R	ON	ON	ON	OFF
B5R	OFF	ON	OFF	OFF

b. Tray (lower) paper size setting

The size of paper in the tray (lower) is set in the 25 mode. (Refer to the Adjustment section.)

2. Signals

a. Input signals

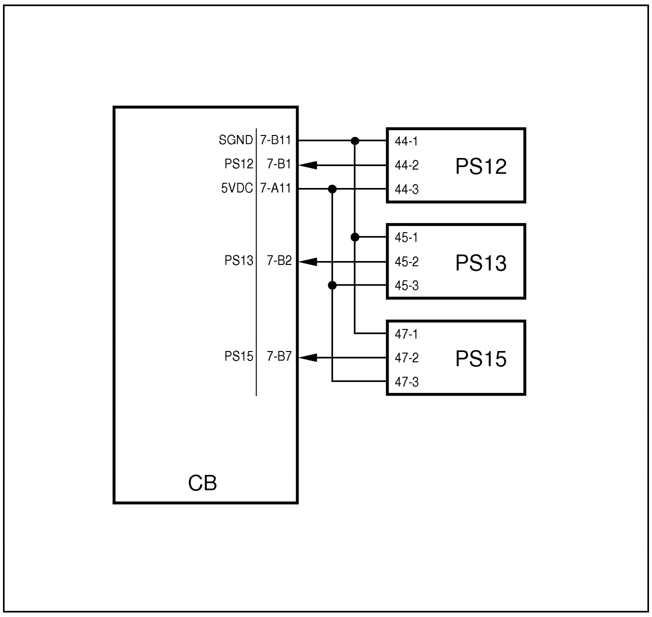
(1) PAPER SIZE RETURN 0 to 3 (Paper size detection board → CB)
Paper size detection switch ON/OFF signal

b. Output signals

(1) TEMP 1 (CB → Paper size detection board)
Upper tray paper size detection timing pulses

(2) TEMP 2 (CB → Paper size detection board)
Lower tray detection timing pulses

[7] No Paper Detection Control


SGND 7-B11
PS12 7-B1
5VDC 7-A11
PS13 7-B2
PS15 7-B7
CB
44-1
44-2
44-3
PS12
45-1
45-2
45-3
PS13
47-1
47-2
47-3
PS15

No paper detection takes place by PS12 (upper tray no paper detection), PS13 (lower tray no paper detection) and PS15 (by-pass no paper detection) which are controlled by the CB (control board).

1. Operation

a. No paper detection control

When a paper feed tray or the by-pass feed tray becomes empty, PS12, PS13 or PS15 goes ON. As a result, the corresponding LED on OB1 (operation board 1) lights, and a message is displayed on the LCD (VFD1, VFD2) connected to OB2 (operation board 2).

2. Signals

a. Input signals

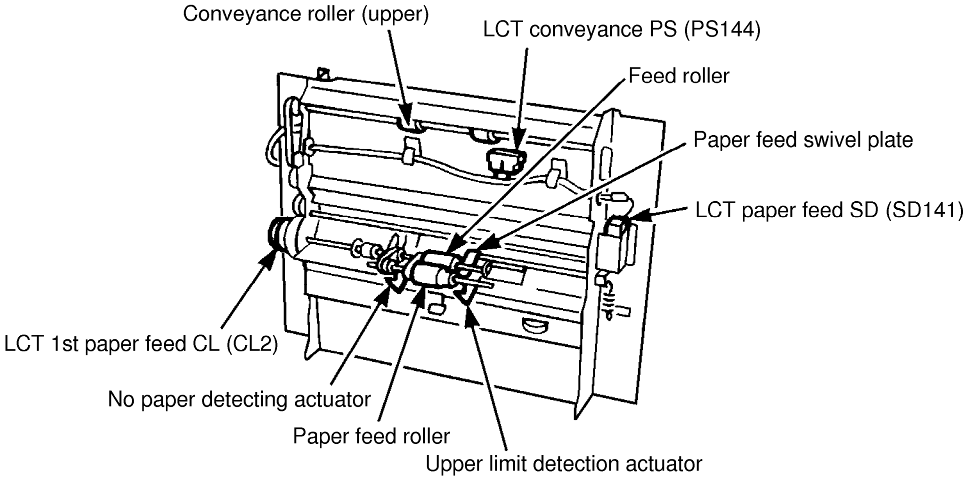
(1) PS12 (PS12 → CB)
Upper tray no paper detection signal
[L]: No paper in tray
[H]: Paper in tray

(2) PS13 (PS13 → CB)
Lower tray no paper detection signal
[L]: No paper in tray
[H]: Paper in tray

(3) PS15 (PS15 → CB)
By-pass feed tray no paper detection signal
[L]: No paper in tray
[H]: Paper in tray

LCT-1000 TRAY PAPER FEED/CONVEYANCE SECTION

[1] Composition


Conveyance roller (upper)
LCT conveyance PS (PS144)
Feed roller
Paper feed swivel plate
LCT paper feed SD (SD141)
LCT 1st paper feed CL (CL2)
No paper detecting actuator
Paper feed roller
Upper limit detection actuator

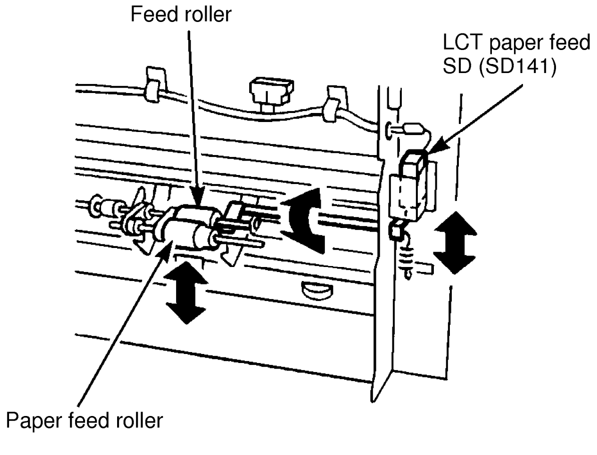
[2] Mechanisms

	Mechanism	Method
*1	Feed	Roller swiveling
	1st paper feed	1st paper feed roller; paper feed solenoid, paper feed clutch
	Double feed prevention	Torque limiter
	No paper detection	Photosensor
	Paper size detection	None
	Paper conveyance	Roller conveyance
	Conveyance drive	Timing belt

*1: Roller swiveling

To prevent the 1st paper feed roller from touching the paper and causing a paper jam when the paper tray is being removed, the paper feed roller is designed so that it drops down and touches the paper only when paper feed is taking place.

This operation takes place as a result of the LCT paper feed solenoid driving the paper feed swivel plate.


Feed roller
LCT paper feed
SD (SD141)
Paper feed roller

[3] Disassembly and Re-assembly

1. Removing and Re-installing the 1000 Tray Paper Feed/Conveyance Section

⚠ **Caution: Be sure that the power cord has been unplugged from the power outlet.**

a. Procedure

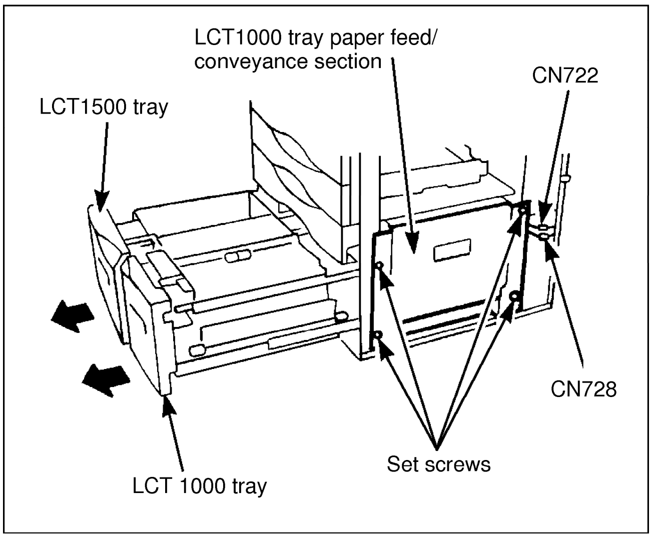
(1) Open the front door, then withdraw the LCT1000 tray/LCT1500 tray in the forward direction.

(2) Slacken the four set screws, then remove the right side upper cover.

(3) Slacken the two set screws, then remove the right side lower cover.

(4) Disconnect the two intermediate connectors (CN722, 728).

(5) Remove the four set screws, then remove the LCT1000 paper feed/conveyance section.


LCT1000 tray paper feed/
conveyance section
CN722
LCT1500 tray
CN728
Set screws
LCT 1000 tray

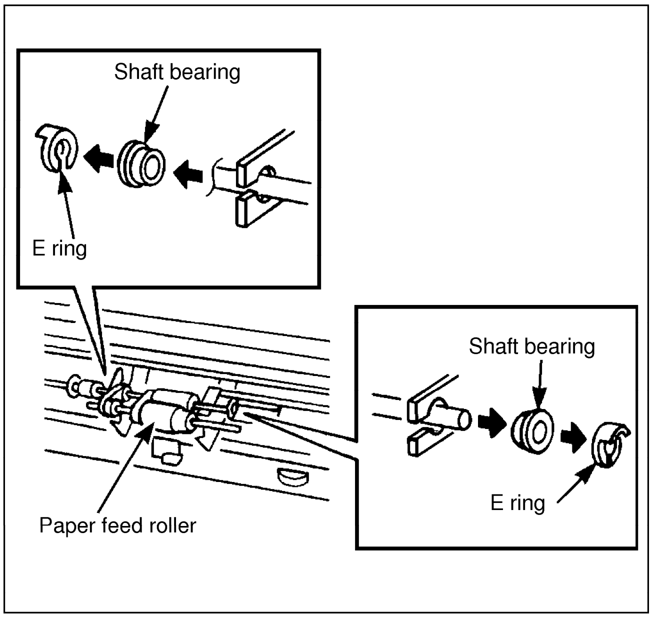
(6) Re-install the 1000 tray paper feed/conveyance section in the opposite sequence to removal.

2. Replacing the Rubber of the Paper Feed Roller and the Feed Roller

a. Procedure

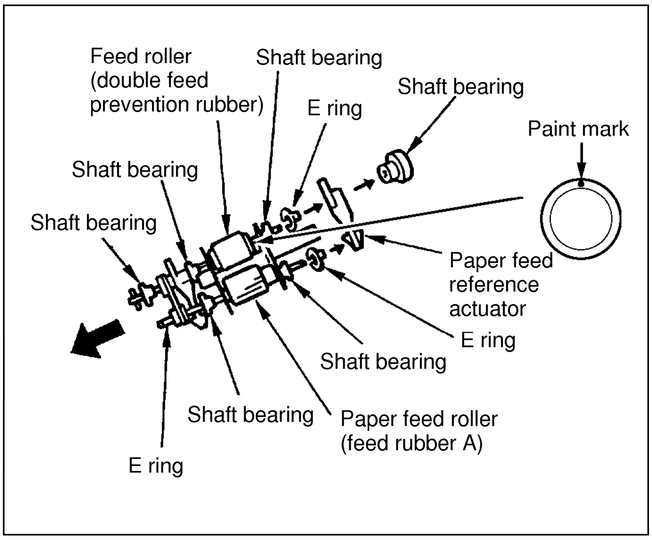
(1) Remove the LCT1000 paper feed/conveyance section.

(2) Remove the two E rings, then shift the left and right shaft bearings to the outside, and remove the paper feed roller unit.


Shaft bearing
E ring
Shaft bearing
E ring
Paper feed roller

(3) Pull out the three E rings, the three shaft bearings, the paper feed reference actuator and the two shafts of the paper feed roller unit, then remove each roller.

(4) Remove the rubber from each roller (feed rubber A and the double feed prevention rubber).


Feed roller
(double feed
prevention rubber)
Shaft bearing
E ring
Shaft bearing
Paint mark
Shaft bearing
Shaft bearing
Paper feed
reference
actuator
E ring
Shaft bearing
Shaft bearing
Paper feed roller
(feed rubber A)
E ring

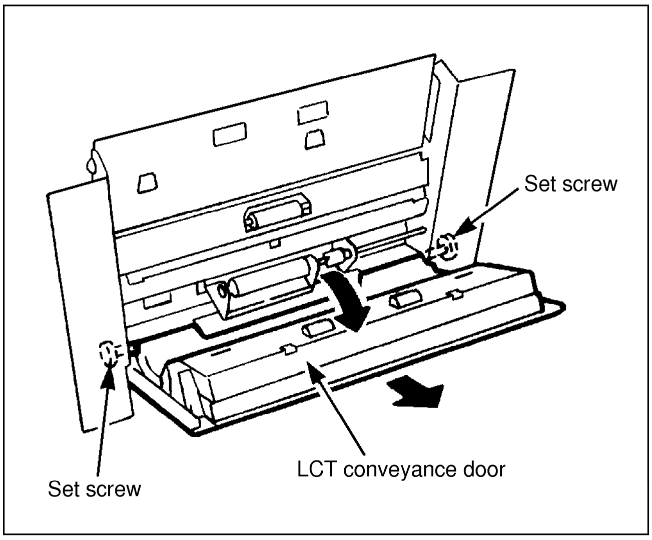
(5) Re-install the rubber in the opposite sequence to removal. (Be careful of the direction of the paint mark on each rubber.)

2. Replacing the Rubber of the Double Feed Prevention Roller

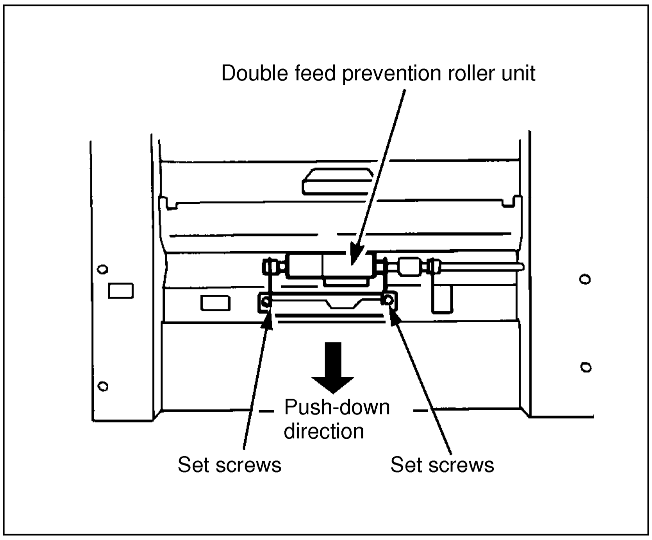
a. Procedure

(1) Remove the four set screws, then remove the LCT1000 paper feed/conveyance section.

(2) Slacken the two set screws, then remove the LCT conveyance door.

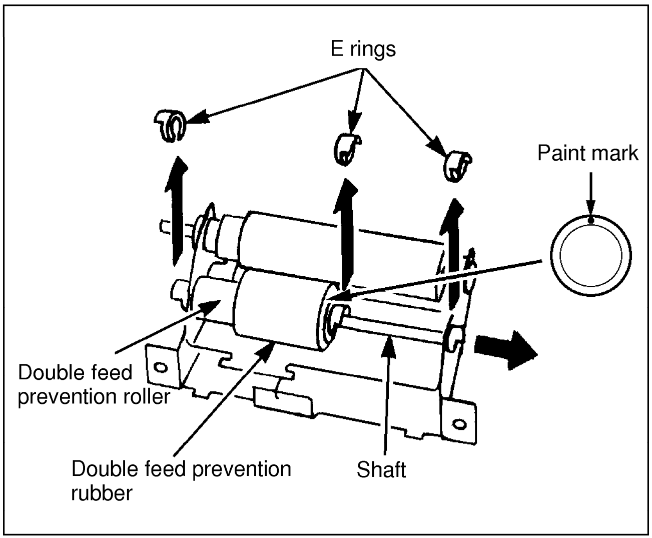

Set screw
Set screw
LCT conveyance door

(3) Remove the two set screws, then remove the double feed prevention roller unit. (When re-installing the roller, push it downward and fix it.)


Double feed prevention roller unit
Push-down direction
Set screws
Set screws

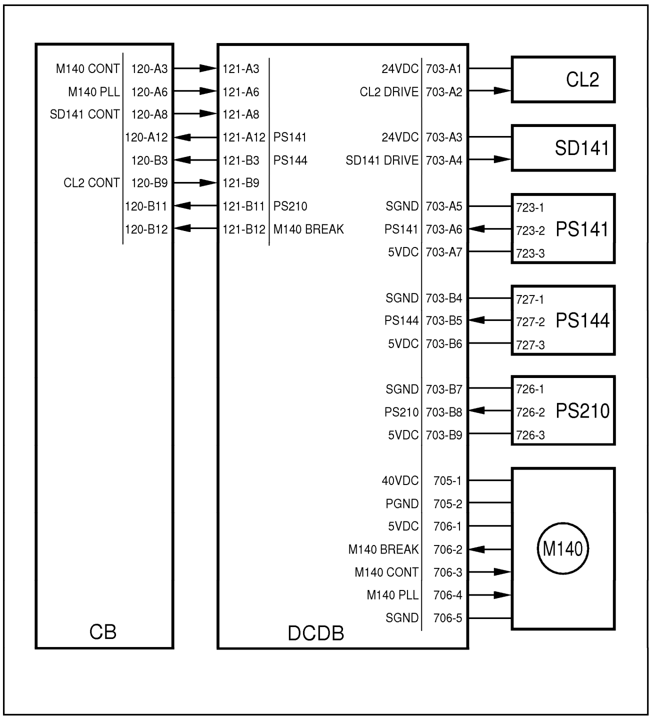
(4) Remove the three E rings, then pull out the shaft, and remove the double feed prevention roller.

(5) Remove the double feed prevention rubber from the double feed prevention roller.


E rings
Paint mark
Double feed prevention roller
Double feed prevention rubber
Shaft

(6) Re-install the rubber in the opposite sequence to removal. (Be careful of the direction of the paint mark on the rubber, and also the direction in which you push down the double feed prevention roller unit.)

## [4] 1000 Tray Paper Feed/No Paper Detection Control


M140 CONT
M140 PLL
SD141 CONT
CL2 CONT
120-A3
120-A6
120-A8
120-A12
120-B3
120-B9
120-B11
120-B12
CB
121-A3
121-A6
121-A8
121-A12
121-B3
121-B9
121-B11
121-B12
PS141
PS144
PS210
M140 BREAK
24VDC
CL2 DRIVE
24VDC
SD141 DRIVE
SGND
PS141
5VDC
SGND
PS144
5VDC
SGND
PS210
5VDC
40VDC
PGND
5VDC
M140 BREAK
M140 CONT
M140 PLL
SGND
703-A1
703-A2
703-A3
703-A4
703-A5
703-A6
703-A7
703-B4
703-B5
703-B6
703-B7
703-B8
703-B9
705-1
705-2
706-1
706-2
706-3
706-4
706-5
DCDB
CL2
SD141
723-1
723-2
723-3
PS141
727-1
727-2
727-3
PS144
726-1
726-2
726-3
PS210
M140

The 1st paper feed from the 1000 tray takes place as a result of the transmission of the rotational force of M140 (LCT paper feed) by means of CL1 (LCT 1st paper feed (1000)). The paper feed roller does not touch the paper at this time, so SD141 (LCT 1st paper feed (1000)) swivels, bringing the paper feed roller into contact with the paper.

M140, CL1 and SD141 are driven by the DCDB (DC driver board) which is controlled by the CB (control board). Related signals are PS141 (LCT no paper detection (1000)), PS144 (LCT conveyance (1000)), and PS210 (LCT pre-feed (1000)).

1. Operation

a. 1st paper feed operation timing

(1) Start of paper feed for 1st copy
Timing determined by the P counter from when the charging corona unit goes ON

(2) Start of paper feed for 2nd copy
After the specified period from when PS14 (registration) goes ON during the 1st copy operation.

(3) OFF timing
Specified count on the P counter

b. No paper detection control

When the copy paper in the LCT1000 tray runs out, PS141 goes ON, the corresponding LED on OB1 (operation board 1) lights, and a message appears on the LCD (VFD1, VFD2) connected to OB2 (operation board 2).

2. Signals

a. Input signals

(1) M140 brake state signal
[H]: Brake ON
[L]: Brake OFF

(2) PS141 (PS141 → DCDB → CB)
No paper detection signal from the 1000 tray
[H]: No paper in tray
[L]: Paper in tray

(3) PS144 (PS144 → DCDB → CB)
Paper passage detection signal from the 1000 tray conveyance section.
This signal is [L] while paper is passing through the 1000 tray conveyance section.

(4) PS210 (PS210 → DCDB → CB)
1st paper feed detection signal from the 1000 tray.
This signal becomes [L] when paper is detected.

b. Output signals

(1) M140 CONT (CB → DCDB → M140)
M140 ON/OFF control signal
[H]: M140 OFF
[L]: M140 ON

(2) M140 PLL (CB → DCDB → M140)
PLL control clock signal for M140

(3) CL1 CONT (CB → DCDB)
ON/OFF control signal for CL1
[H]: CL1 OFF
[L]: CL1 ON

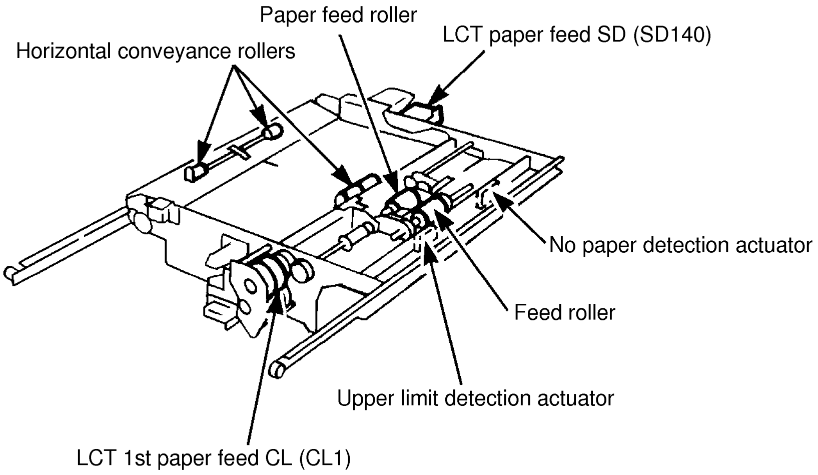
(4) SD141 CONT (CB → DCDB)
ON/OFF control signal for SD141
[H]: SD141 OFF
[L]: SD141 ON

(5) CL1 DRIVE (DCDB → CL1)
ON/OFF drive signal for CL1
[H]: CL1 OFF
[L]: CL1 ON

(6) SD141 CONT (DCDB → SD141)
ON/OFF drive signal for SD141
[H]: SD141 OFF
[L]: SD141 ON

LCT-1500 TRAY PAPER FEED/CONVEYANCE SECTION

[1] Composition


Paper feed roller
LCT paper feed SD (SD140)
Horizontal conveyance rollers
No paper detection actuator
Feed roller
Upper limit detection actuator
LCT 1st paper feed CL (CL1)

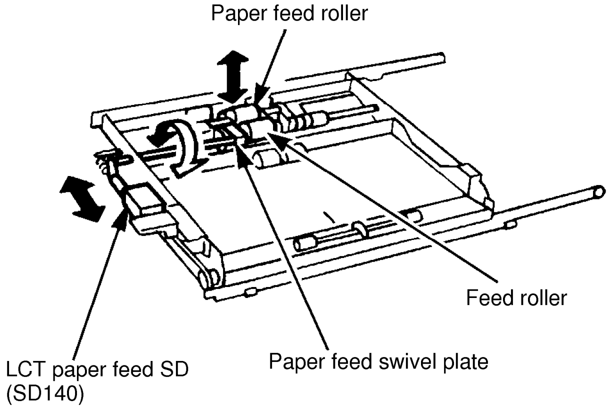
[2] Mechanisms

	Mechanism	Method
*1	Feed	Roller swivel
	1st paper feed	1st paper feed roller, paper feed solenoid
	Double feed prevention	Torque limiter
	No paper detection	Photo sensor
	Paper size detection	None
	Paper conveyance	Roller conveyance
	Conveyance drive	Timing belt

*1: Roller swiveling

To prevent the 1st paper feed roller from touching the paper and causing a paper jam when the paper tray is being removed, the paper feed roller is designed so that it drops down and touches the paper only when paper feed is taking place.

This operation is takes place as a result of the LCT paper feed solenoid driving the paper feed swivel plate.


Paper feed roller
Feed roller
LCT paper feed SD (SD140)
Paper feed swivel plate

[3] Disassembly and Re-assembly

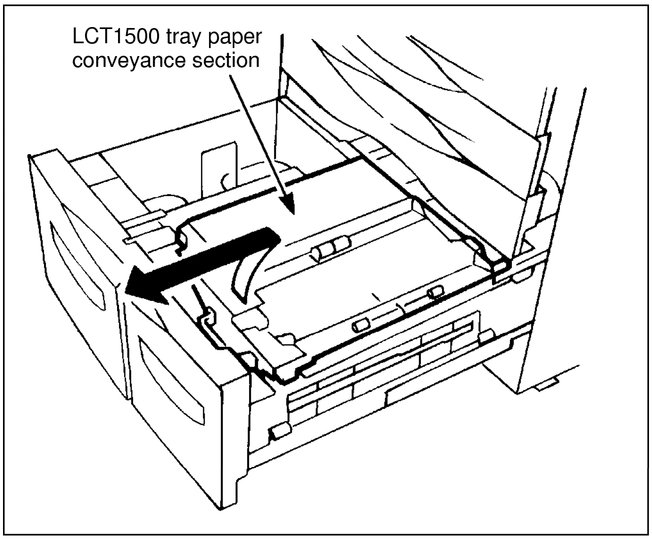
1. Removing and Re-installing the 1500 Tray Paper Feed/Conveyance Section

⚠ Caution: Be sure that the power cord has been unplugged from the power outlet.

a. Procedure

(1) Withdraw the LCT1000 tray/LCT1500 tray in the forward direction.

(2) Withdraw the LCT1500 tray paper feed/conveyance section in the forward direction, then withdraw it further and lift it out.


LCT1500 tray paper conveyance section

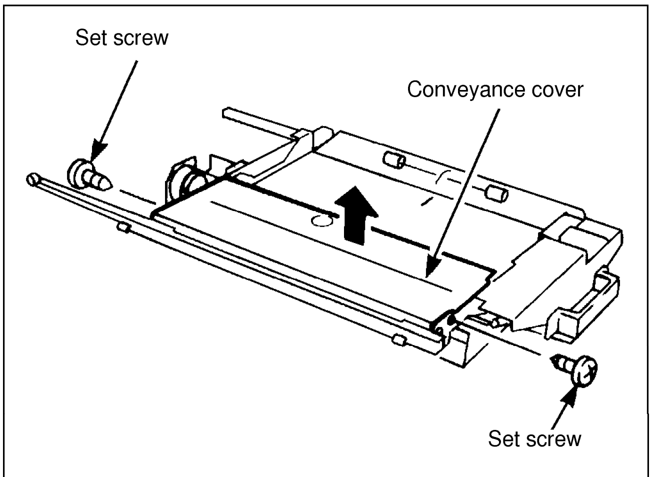
(3) Re-install the 1500 tray paper feed/conveyance section in the opposite sequence to removal.

2. Replacing the Rubber of the Paper Feed Roller and Feed Roller

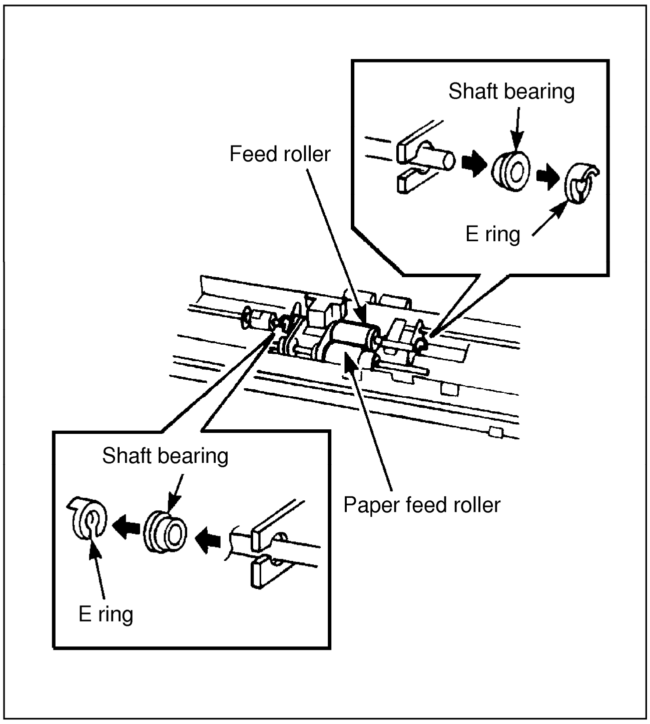
a. Procedure

(1) Remove the LCT1500 paper feed/conveyance section.

(2) Remove the two set screws, then remove the conveyance cover.

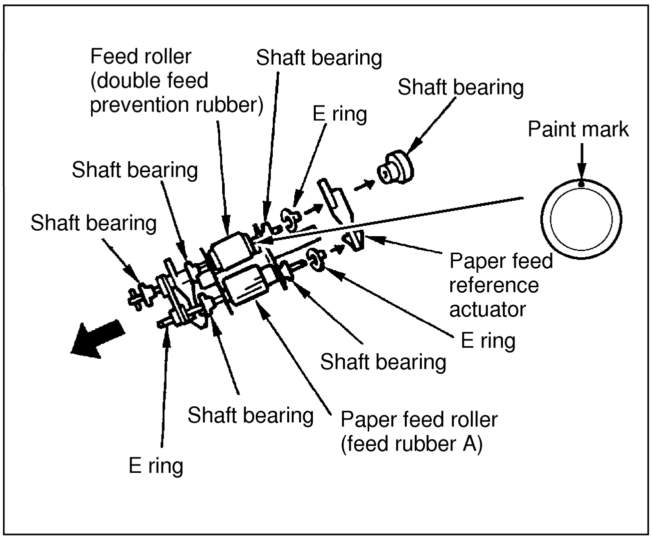

Set screw
Conveyance cover
Set screw

(3) Remove the two E rings, then shift the left and right shaft bearings to the outside, and remove the upper stage 1st paper feed roller unit.


Shaft bearing
Feed roller
E ring
Shaft bearing
Paper feed roller
E ring

(4) Pull out the three E rings, the three shaft bearings, the paper feed reference actuator and the two shafts of the paper feed roller unit, then remove each roller.

(5) Remove the rubber from each roller (feed rubber A and the double feed prevention rubber).


Feed roller (double feed prevention rubber)
Shaft bearing
Shaft bearing
E ring
Paint mark
Shaft bearing
Shaft bearing
Paper feed reference actuator
E ring
Shaft bearing
Shaft bearing
Paper feed roller (feed rubber A)
E ring

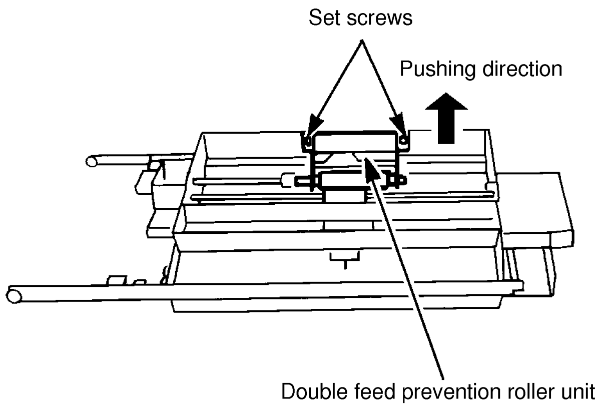
(6) Re-install the rubber in the opposite sequence to removal. (Be careful of the direction of the paint mark on each rubber.)

3. Replacing the rubber of the double feed prevention roller

a. Procedure

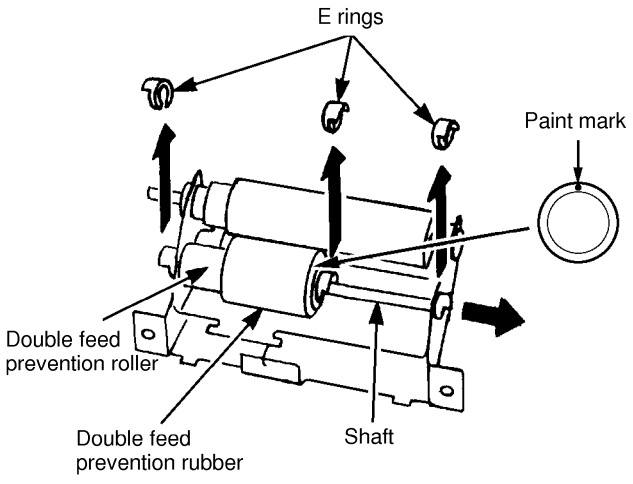
(1) Remove the LCT 1500 paper feed/conveyance section.

(2) Remove the two set screws, then remove the double feed prevention roller. (When re-installing the roller unit, push it against the rear and fix it.)


Set screws
Pushing direction
Double feed prevention roller unit

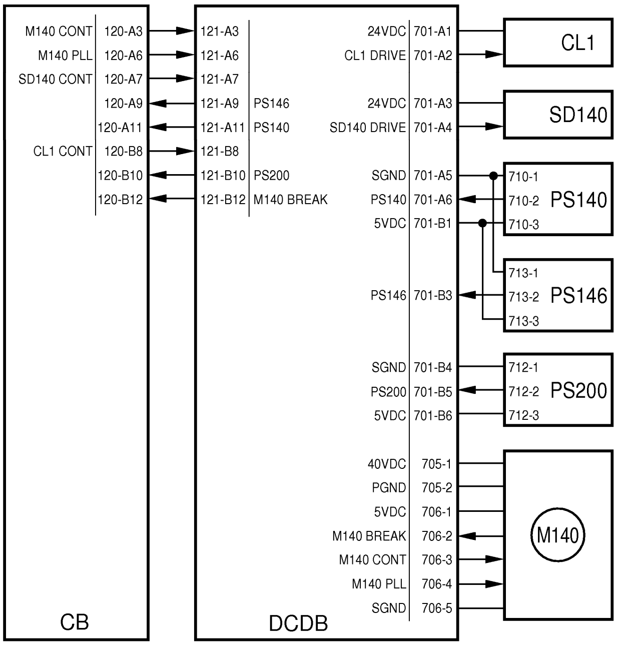
(3) Remove the three E rings, then pull out the shaft and remove the double feed prevention roller.

(4) Remove the double feed prevention rubber from the double feed prevention roller.


E rings
Paint mark
Double feed prevention roller
Double feed prevention rubber
Shaft

(5) Re-install the rubber in the opposite sequence to removal. (Be careful of the direction of the paint mark on the rubber, and also the direction in which you push the double feed prevention roller unit.)

## [4] 1500 Tray Paper Feed/No Paper Detection Control


M140 CONT 120-A3
M140 PLL 120-A6
SD140 CONT 120-A7
120-A9
120-A11
CL1 CONT 120-B8
120-B10
120-B12
CB
121-A3
121-A6
121-A7
121-A9 PS146
121-A11 PS140
121-B8
121-B10 PS200
121-B12 M140 BREAK
24VDC 701-A1
CL1 DRIVE 701-A2
24VDC 701-A3
SD140 DRIVE 701-A4
SGND 701-A5
PS140 701-A6
5VDC 701-B1
PS146 701-B3
SGND 701-B4
PS200 701-B5
5VDC 701-B6
40VDC 705-1
PGND 705-2
5VDC 706-1
M140 BREAK 706-2
M140 CONT 706-3
M140 PLL 706-4
SGND 706-5
DCDB
CL1
SD140
710-1
710-2 PS140
710-3
713-1
713-2 PS146
713-3
712-1
712-2 PS200
712-3
M140

The 1st paper feed from the 1500 tray takes place as a result of the transmission of the rotational force of M140 (LCT paper feed) by means of CL2 (LCT 1st paper feed (1500)). The paper feed roller does not touch the paper at this time, so SD140 (LCT 1st paper feed (1500)) swivels, bringing the paper feed roller into contact with the paper.

M140, CL2 and SD140 are driven by the DCDB (DC driver board) which is controlled by the CB (control board). Related signals are PS140 (LCT no paper detection (1500)), PS146 (LCT conveyance (1500)), and PS200 (LCT pre-feed (1500)).

1. Operation

a. 1st paper feed operation timing

(1) Start of paper feed for 1st copy
Timing determined by the P counter from when the charging corona unit goes ON

(2) Start of paper feed for 2nd copy
Specified period after PS14 (registration) goes ON during the 1st copy operation

(3) OFF timing
Specified count on the P counter

b. No paper detection control

When the copy paper in the LCT1500 tray runs out, PS140 goes ON, the corresponding LED on OB1 (operation board 1) lights, and a message appears on the LCD (VFD1, VFD2) connected to OB2 (operation board 2).

2. Signals

a. Input signals

(1) M140 BRAKE (M140 → DCDB → CB)
M140 brake state signal
[H]: Brake ON
[L]: Brake OFF

(2) PS140 (PS140 → DCDB → CB)
No paper detection signal from the 1500 tray
[H]: No paper in tray
[L]: Paper in tray

(3) PS146 (PS146 → DCDB → CB)
Paper passage detection signal from the 1500 tray conveyance section.
This signal is [L] while paper is passing through the 1500 tray conveyance section.

(4) PS200 (PS200 → DCDB → CB)
1st paper feed detection signal from the 1500 tray
This signal becomes [L] when paper is detected.

b. Output signals

(1) M140 CONT (CB → DCDB → M140)
M140 ON/OFF control signal
[H]: M140 OFF
[L]: M140 ON

(2) M140 PLL (CB → DCDB → M140)
PLL control clock signal for M140

(3) CL2 CONT (CB → DCDB)
ON/OFF control signal for CL2
[H]: CL2 OFF
[L]: CL2 ON

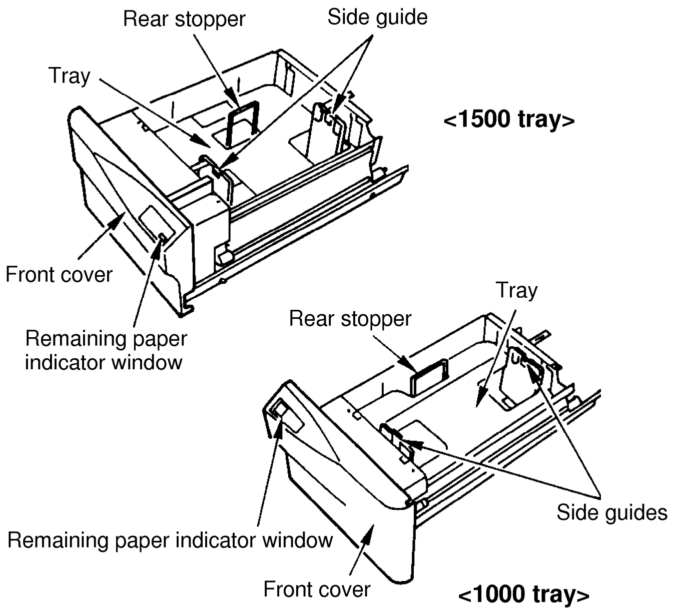
(4) SD140 CONT (CB → DCDB)
ON/OFF control signal for SD140
[H]: SD140 OFF
[L]: SD140 ON

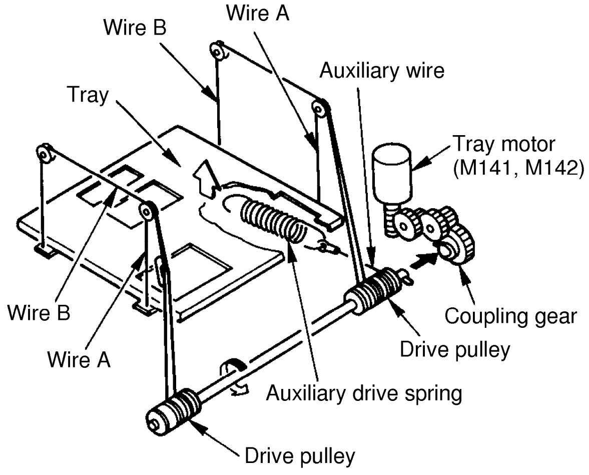
(5) CL2 DRIVE (DCDB → CL2)
ON/OFF drive signal for CL2
[H]: CL2 OFF
[L]: CL2 ON

(6) SD140 CONT (DCDB → SD140)
ON/OFF drive signal for SD140
[H]: SD140 OFF
[L]: SD140 ON

LCT PAPER TRAY SECTION

[1] Composition


Rear stopper
Side guide
Tray
<1500 tray>
Front cover
Remaining paper indicator window
Tray
Rear stopper
Side guides
Remaining paper indicator window
Front cover
<1000 tray>


Wire B
Wire A
Auxiliary wire
Tray
Tray motor (M141, M142)
Coupling gear
Drive pulley
Wire B
Wire A
Auxiliary drive spring
Drive pulley

[2] Mechanisms

	Mechanism	Method
	Paper lift-up	Tray 1 stage
*1	Paper lift-up	Wire drive
	Cassette loading	Front loading
*2	Remaining paper indication	Index sheet

*1: Paper lift-up

The paper tray is suspended by four up-down drive wires (wires A and B — two each).

When paper is supplied to the tray, the tray drops under the weight of the paper, however the weight of the paper is balanced by the tension of the auxiliary drive spring.

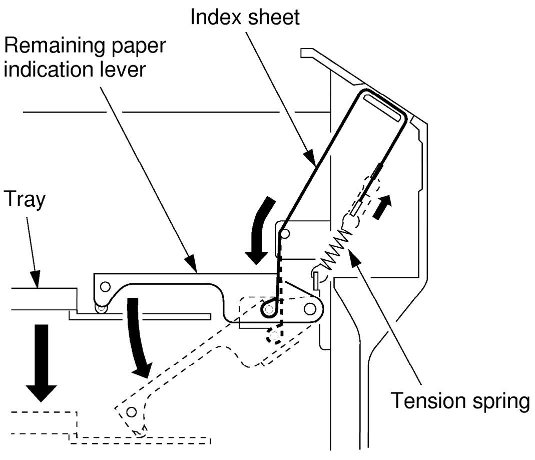
When the paper tray is loaded, the tray motor (M141, M142) rotates, and the wire is wound up on the drive reel, causing the tray to rise.

When the paper tray is withdrawn from the pedestal, the coupling between the tray and the tray drive section is released, hence the tray falls to a position where the weight of the paper is balanced by the tension of the auxiliary drive spring.

*2: Remaining paper indication

The LCT can hold a large amount of paper, hence it has a remaining paper indicator window to enable the user to obtain a rough indication of the amount of paper remaining in the tray.

The remaining paper detection lever moves along with the up-down motion of the tray, and the index sheet is caused to slide by a tension spring.


Index sheet
Remaining paper indication lever
Tray
Tension spring

[3] Disassembly and Re-assembly

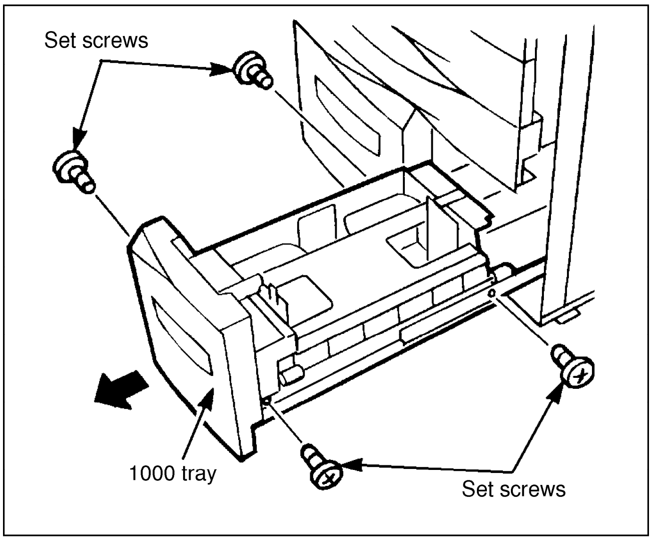
1. Removing and Re-installing the 1000 Tray

⚠ Caution: Be sure that the power cord has been unplugged from the power outlet.

a. Procedure

(1) Withdraw the 1000 tray, then remove the four set screws.

(2) Lift out the 1000 tray.



(3) Re-install the 1000 tray in the opposite sequence to removal. In this case, however, install the front left and right set screws first.

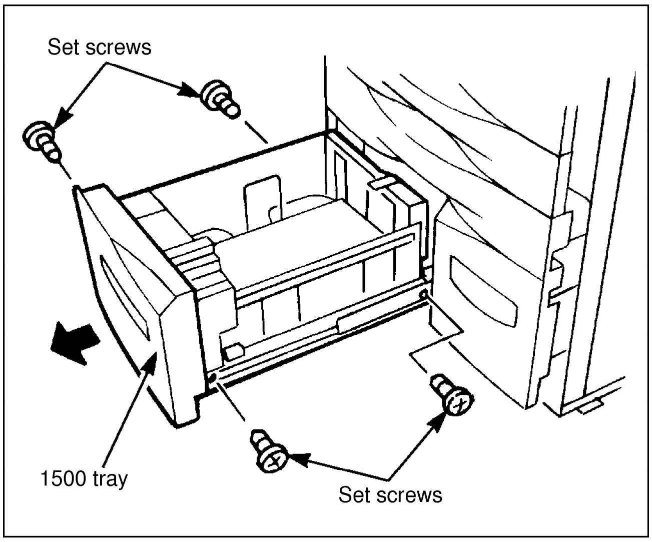
2. Removing and Re-installing the 1500 tray

⚠ Caution: Be sure that the power cord has been unplugged from the power outlet.

a. Procedure

(1) Withdraw the 1500 tray, then remove the four set screws.

(2) Lift out the 1500 tray.



(3) Re-install the 1500 tray in the opposite sequence to removal. In this case, however, install the front left and right set screws first.

3. Replacing the Wires

Caution: The method of installing the tray up-down drive wires is the same for both the front and rear. For this reason, the description of the method of replacing the wires is based on the rear side only.
Install the front wires in exactly the same way as the rear wires.

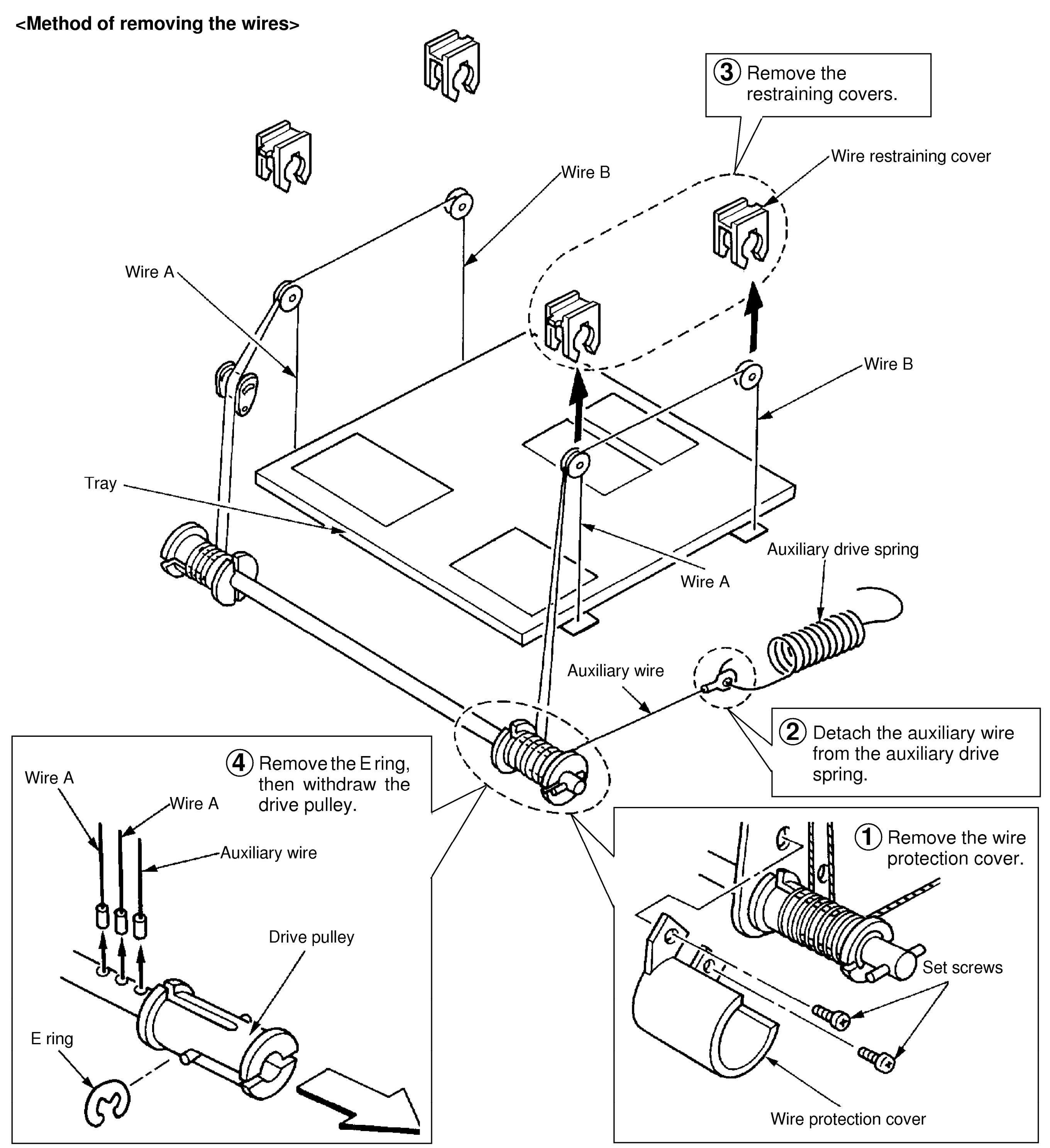
Caution:

a. After replacing or re-installing the wires, move the tray up and down by hand, and confirm that it rises and falls smoothly.

b. Take care that wires do not cross each other or ride up the sides of the pulleys.

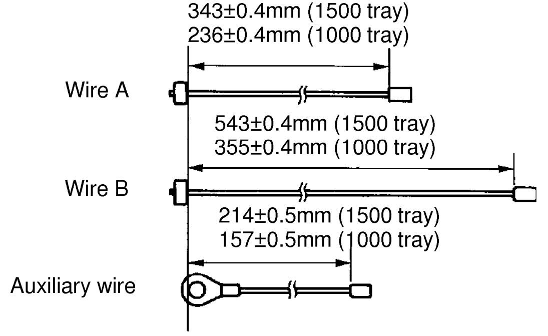
c. Adjust the tilt of the tray after installing the wires.

<Method of removing the wires>

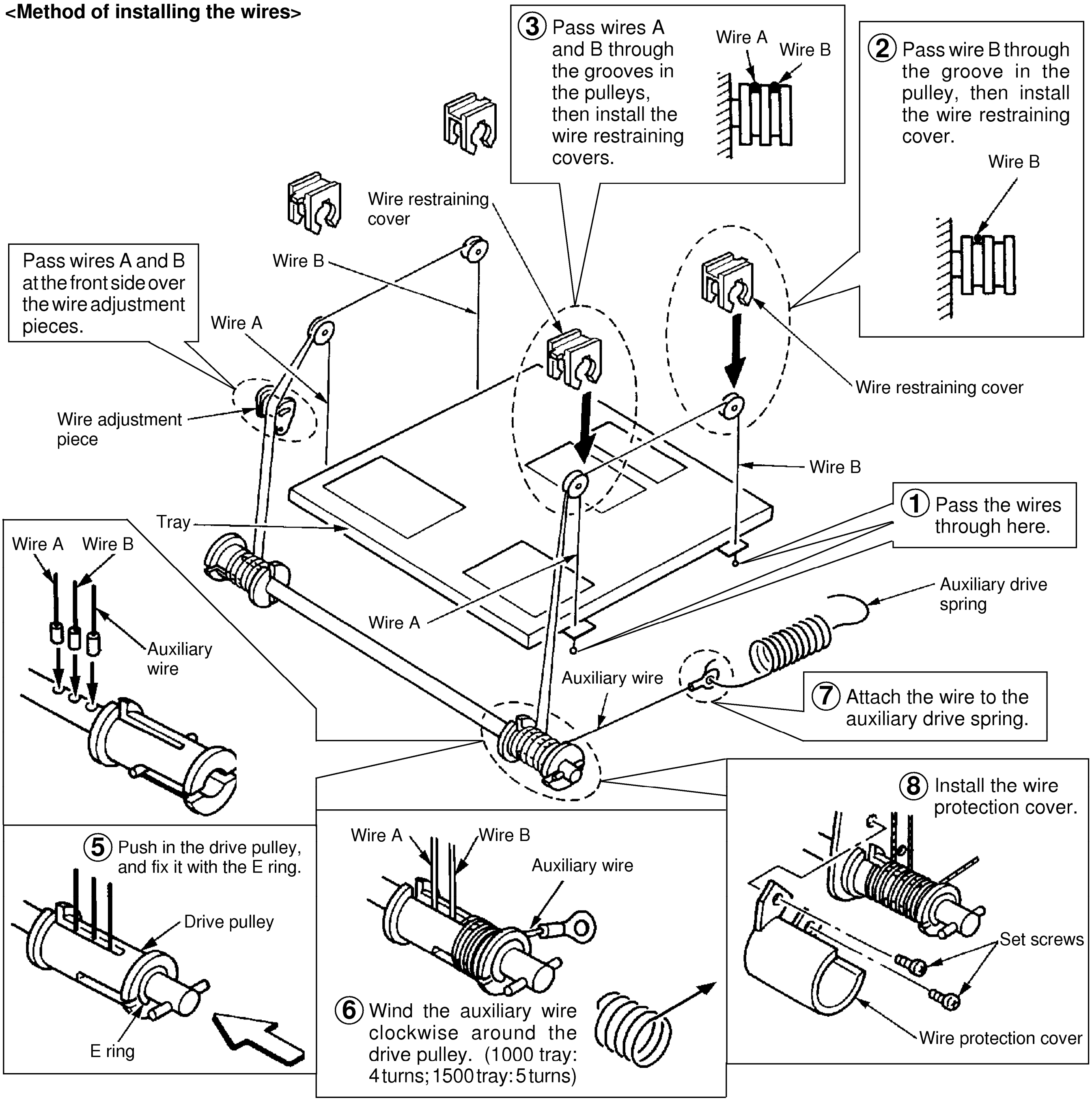


③ Remove the restraining covers.
Wire restraining cover
Wire B
Wire A
Wire B
Tray
Auxiliary drive spring
Wire A
Auxiliary wire
② Detach the auxiliary wire from the auxiliary drive spring.
④ Remove the E ring, then withdraw the drive pulley.
Wire A
Wire A
Auxiliary wire
Drive pulley
E ring
① Remove the wire protection cover.
Set screws
Wire protection cover

<Wire length>


343±0.4mm (1500 tray)
236±0.4mm (1000 tray)
Wire A
543±0.4mm (1500 tray)
355±0.4mm (1000 tray)
Wire B
214±0.5mm (1500 tray)
157±0.5mm (1000 tray)
Auxiliary wire

<Method of installing the wires>


Wire A
Wire B
Wire restraining cover
Wire B
Wire A
Wire adjustment piece
Tray
Wire A
Wire B
Auxiliary wire
Wire A
Wire restraining cover
Wire B
Auxiliary drive spring
Auxiliary wire
Drive pulley
E ring
Wire A
Wire B
Auxiliary wire
Set screws
Wire protection cover

① Pass the wires through here.

② Pass wire B through the groove in the pulley, then install the wire restraining cover.

③ Pass wires A and B through the grooves in the pulleys, then install the wire restraining covers.

Pass wires A and B at the front side over the wire adjustment pieces.

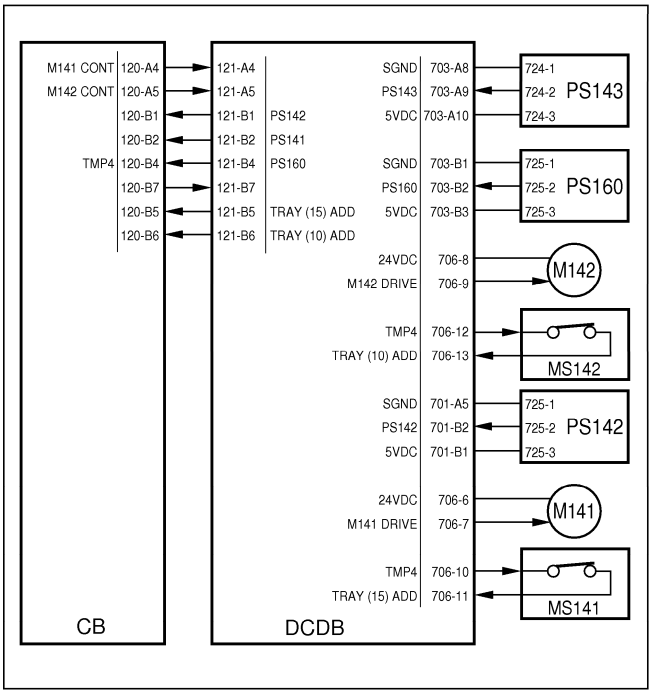
⑤ Push in the drive pulley, and fix it with the E ring.

⑥ Wind the auxiliary wire clockwise around the drive pulley. (1000 tray: 4 turns; 1500 tray: 5 turns)

⑦ Attach the wire to the auxiliary drive spring.

⑧ Install the wire protection cover.

[4] Tray up-down Control


M141 CONT
M142 CONT
TMP4
120-A4
120-A5
120-B1
120-B2
120-B4
120-B7
120-B5
120-B6
CB
121-A4
121-A5
121-B1
121-B2
121-B4
121-B7
121-B5
121-B6
PS142
PS141
PS160
TRAY (15) ADD
TRAY (10) ADD
SGND
PS143
5VDC
SGND
PS160
5VDC
24VDC
M142 DRIVE
TMP4
TRAY (10) ADD
SGND
PS142
5VDC
24VDC
M141 DRIVE
TMP4
TRAY (15) ADD
703-A8
703-A9
703-A10
703-B1
703-B2
703-B3
706-8
706-9
706-12
706-13
701-A5
701-B2
701-B1
706-6
706-7
706-10
706-11
DCDB
724-1
724-2
724-3
PS143
725-1
725-2
725-3
PS160
M142
MS142
725-1
725-2
725-3
PS142
M141
MS141

The tray rises as a result of the transmission of the rotational force of M141 (tray (1500)) and M142 (tray (1000)) by means of the drive wires (four wires each).
M141 and M142 are driven by the DCDB (DC driver board) which is controlled by the CB (control board).
Related signals are MS141 (LCT interlock (1500)), MS142 (LCT interlock (1000)), PS142 (LCT upper limit detection (1500)), PS143 (LCT upper limit detection (1000)), and PS160 (LCT conveyance open/close detection).

1. Operation

When MS141 or MS142 detects a paper tray, M141 or M142 goes ON, causing the corresponding tray to rise.
The tray rises until PS142 or PS143 detects the upper limit of the paper and goes ON, then M141 or M142 goes OFF, and the tray stops rising.
The paper is fed until PS142 or PS143 goes OFF, then M414 or M142 goes ON once again, and the tray rises.
The lowering operation of both the 1500 tray and 1000 tray takes place mechanically.

2. Signals

a. Input signals

(1) PS142 (PS142 → DCDB → CB)
1500 tray upper limit detection signal.
This signal becomes [L] when the upper limit is detected.

(2) TRAY (15) ADD (MS141 → DCDB → CB)
"1500 tray loaded" detection signal.
This signal is the TMP4 signal which is input via MS141 when the tray is detected.

(3) PS143 (PS143 → DCDB → CB)
1000 tray upper limit detection signal.
This signal becomes [L] when the upper limit is reached.

(4) TRAY (10) ADD (MS142 → DCDB → CB)
"1000 tray loaded" detection signal.
This signal is the TM4 signal which is input via MS142 when the tray is detected.

(5) PS160 (PS160 → DCDB → CB)
LCT conveyance door open/close detection signal
[H]: LCT conveyance door open
[L]: LCT conveyance door closed

b. Output signals

(1) M141 CONT (CB → DCDB)
M141 ON/OFF control signal
[H]: M141 OFF
[L]: M141 ON

(2) M142 CONT (CB → DCDB)
M403 ON/OFF control signal
[H]: M142 OFF
[L]: M142 ON

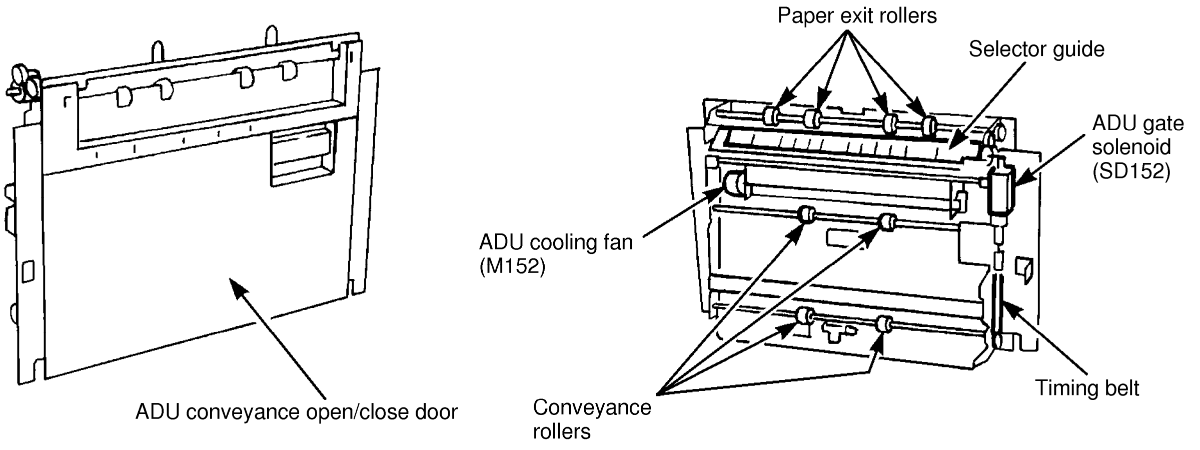
(3) TMP4 (CB → DCDB → MS141, MS142)
This is a pulse signal which detects the fact that the 1500 tray and the 1000 tray are loaded.

(4) M141 DRIVE (DCDB → M141)
M141 ON/OFF drive signal
[H]: M141 OFF
[L]: M141 ON

(5) M142 DRIVE (DCDB → M142)
M142 ON/OFF drive signal
[H]: M142 OFF
[L]: M142 ON

ADU PAPER EXIT/CONVEYANCE SECTION

[1] Composition


ADU conveyance open/close door
Paper exit rollers
Selector guide
ADU gate solenoid (SD152)
ADU cooling fan (M152)
Conveyance rollers
Timing belt

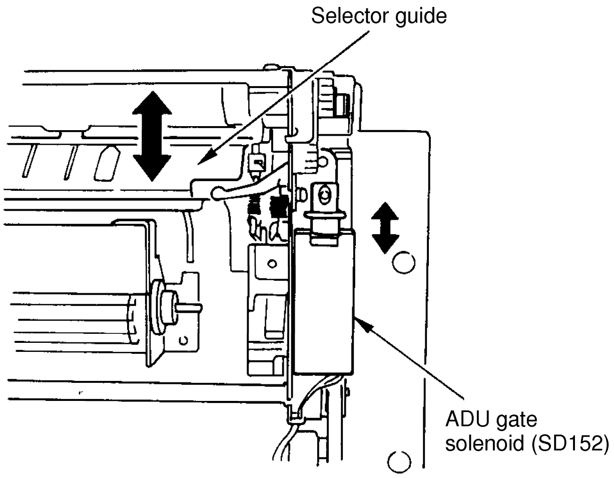
[2] Mechanisms

	Mechanism	Method
*1	Paper path selection	Selector guide
	Paper conveyance	Conveyance roller

*1: Selecting the paper path

The paper that is exited from the fixing unit of the main body is either exited from the machine or sent to the ADU paper exit/conveyance section depending upon the setting of the selector guide.

The selector guide operates according to the ON/OFF state of the ADU gate solenoid (SD152).


Selector guide
ADU gate solenoid (SD152)

[3] Disassembly and Re-assembly

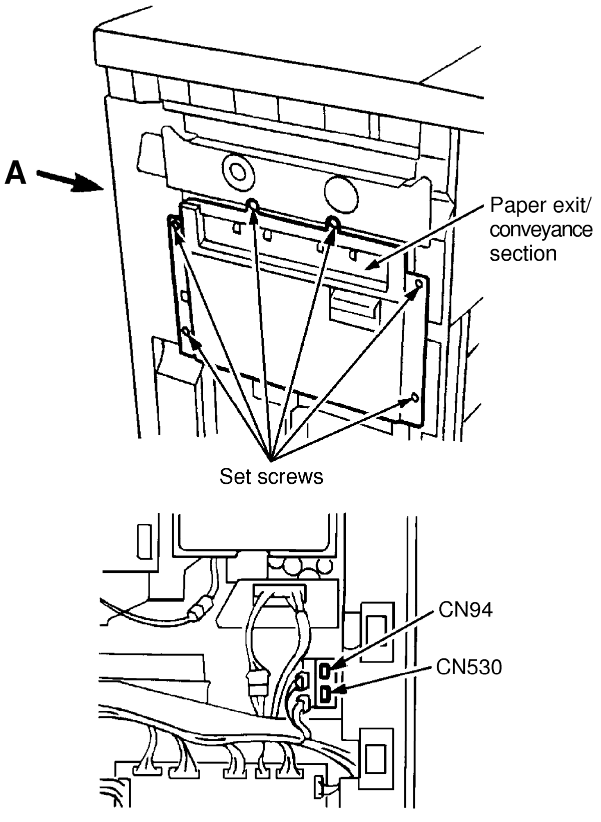
1. Removing the ADU Paper Exit/Conveyance Section

⚠ **Caution: Be sure that the power cord has been unplugged from the power outlet.**

a. Procedure

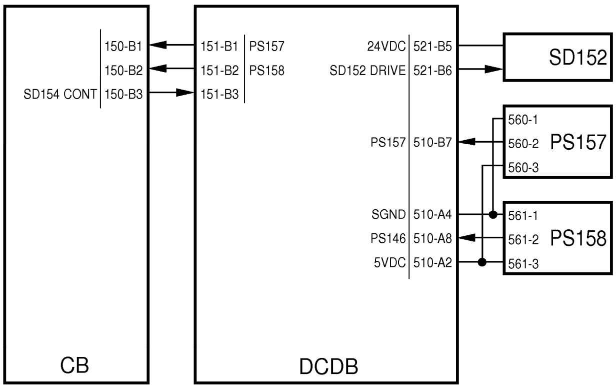
(1) Remove the cover at top left of the main body.

(2) Disconnect the two connectors (CN94, 530), then remove the six set screws, and remove the ADU paper exit/conveyance section.


A
Paper exit/ conveyance section
Set screws
CN94
CN530

View in A direction

[4] Selector Guide


150-B1
150-B2
SD154 CONT 150-B3
151-B1 PS157
151-B2 PS158
151-B3
24VDC 521-B5
SD152 DRIVE 521-B6
SD152
560-1
560-2
560-3
PS157
PS157 510-B7
SGND 510-A4
PS146 510-A8
5VDC 510-A2
561-1
561-2
561-3
PS158
CB
DCDB

The selector guide is driven by SD152 (ADU gate).

SD152 is driven by the DCDB (DC driver board) which is controlled by the CB (control board).

Related signals are PS157 (ADU gate) and PS158 (ADU conveyance door open/close detection).

1. Operation

a. Selector guide control

When the face side copy is made, SD152 goes ON after the specified time from when MC3 (2nd paper feed) goes ON, causing the selector guide to open. As a result, the paper exited from the fixing unit is conveyed to the ADU paper exit/conveyance section.

SD152 goes OFF after the specified time from when PS25 (paper exit) detects the trailing edge of the paper and goes ON, then the selector guide closes.

b. Paper exit/conveyance control

The paper exit roller and conveyance roller are driven by M1 (main), and the paper exited from the fixing unit is conveyed to the ADU paper exit/conveyance section.

2. Signals

a. Input signals

(1) PS157 (PS157 → DCDB → CB)

Signal which detects the passage of paper through the entrance of the stacker.

This signal becomes [H] when paper is detected.

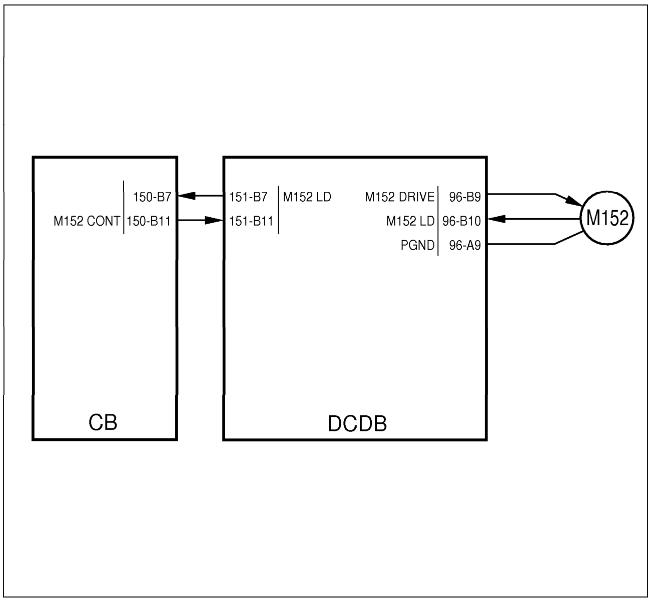
(2) PS158 (PS158 → DCDB → CB)
Signal which detects the open/closed state of the ADU conveyance door
[H]: ADU conveyance door open
[L]: ADU conveyance door closed

b. ADU DB output signals

(1) SD154 CONT (CB → DCDB)
SD154 ON/OFF control signal
[H]: SD154 OFF
[L]: SD154 ON

(2) SD154 DRIVE (DCDB → SD154)
SD154 ON/OFF drive signal
[H]: SD154 OFF
[L]: SD154 ON

[5] M152 (ADU cooling fan) Control



M152 (ADU cooling fan) is installed in the paper exit/conveyance section in order to prevent curling of the paper.
M152 is driven by the DCDB (DC driver board) which is controlled by the CB (control board).

1. Operation

a. ON timing

After the specified time from when MC3 (2nd paper feed) goes ON

b. OFF timing

When M4 (drum) goes OFF

2. Signals

a. Input signals

(1) M152 LD (M152 → DC DB → CB)
[L] is output when M152 reaches the specified speed.

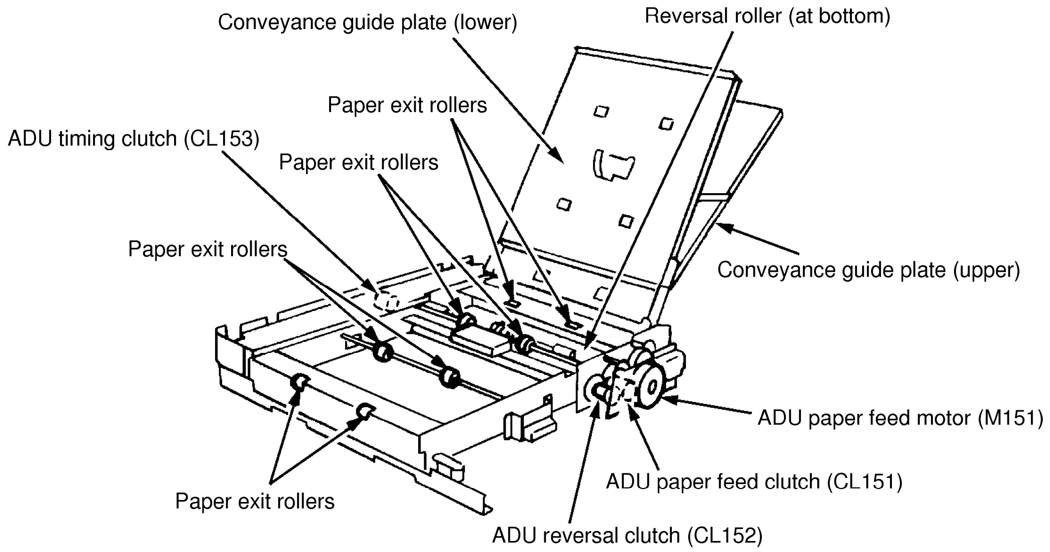
b. Output signals

(1) M152 CONT (CB → DC DB)
M152 ON/OFF control signal
[L]: M152 ON
[H]: M152 OFF

(2) M152 DRIVE (DC DB → M152)
M152 ON/OFF drive signal
[L]: M152 ON
[H]: M152 OFF

ADU PAPER FEED/CONVEYANCE SECTION

[1] Composition

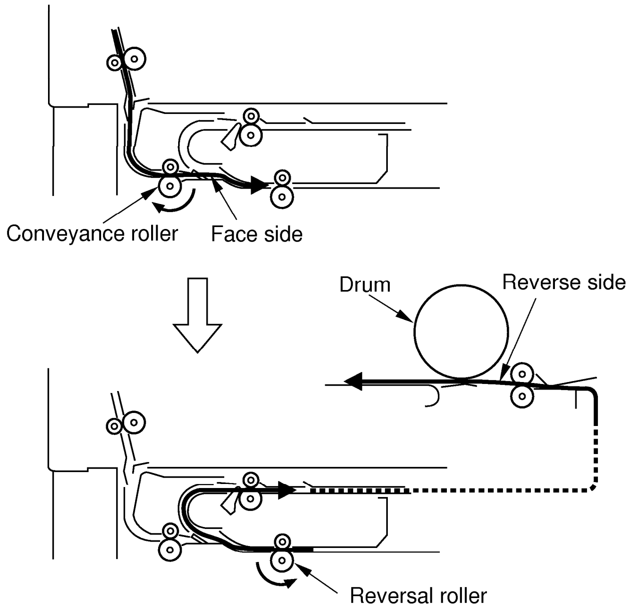

Conveyance guide plate (lower)
Reversal roller (at bottom)
Paper exit rollers
ADU timing clutch (CL153)
Paper exit rollers
Paper exit rollers
Conveyance guide plate (upper)
ADU paper feed motor (M151)
ADU paper feed clutch (CL151)
Paper exit rollers
ADU reversal clutch (CL152)

[2] Mechanisms

	Mechanism	Method
*1	Paper feed	Non-stack selection
*2	Paper path selection	Selector gate
	Paper conveyance	Conveyance roller (one) Reversal roller (one) Paper exit rollers (four)
	Conveyance drive	Timing belts (four) + gear
*3	Jam clearance	Selector gate, conveyance guide plate (B), opening/closing of conveyance guide plate (upper)/(lower)

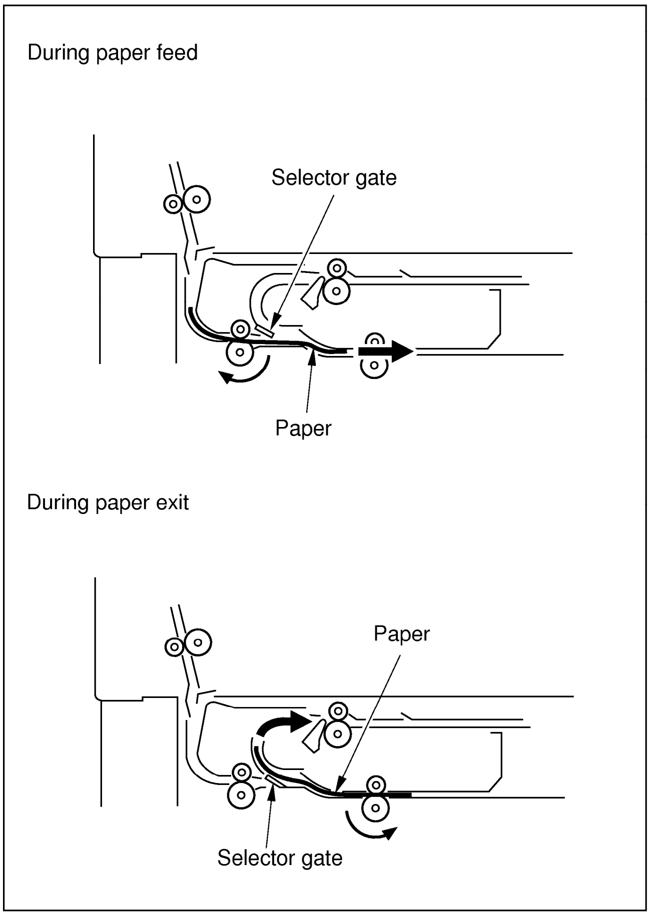
*1: Non-stack paper feed mechanism

The paper in the paper exit/conveyance section is fed to the paper feed unit by the conveyance rollers. When the trailing edge of the paper is completely inside the paper feed unit, it is exited to the conveyance unit by the reversal roller without being stacked. At this time, the paper is exited from the trailing edge side, hence the face side and reverse side are inverted in the conveyance unit.


Conveyance roller
Face side
Drum
Reverse side
Reversal roller

*2: Paper path selection

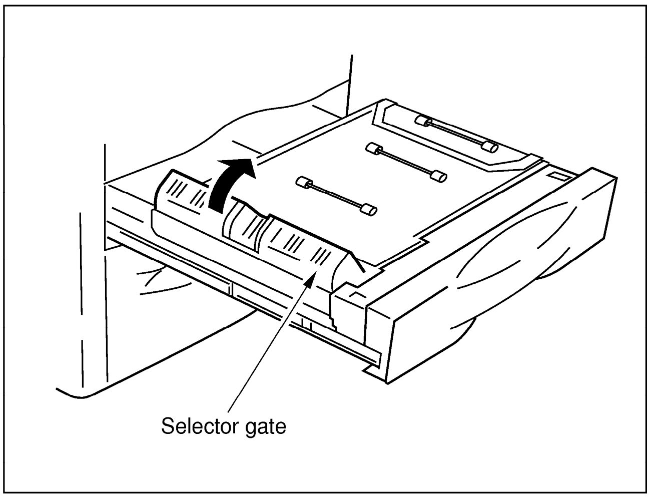
The selector gate switches the path of the paper exit/conveyance between the paper advance path from the paper exit/conveyance section to the paper feed section, and the paper exit path from the paper feed section to the conveyance section. The selector gate does not have a drive mechanism. The paper path is determined by the shape of leading edge of the gate.


During paper feed
Selector gate
Paper
During paper exit
Paper
Selector gate

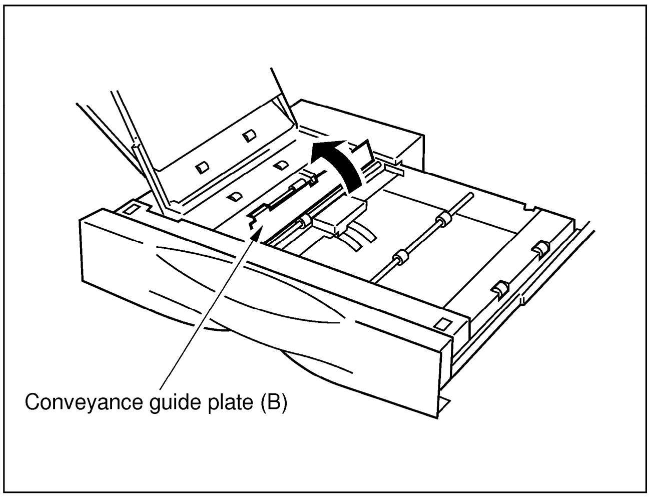
*3: Jam clearance mechanism

There is a jam clearance mechanism on each of the selector gate, the paper feed unit and the conveyance unit. Jammed paper can be removed by opening and closing the selector gate, conveyance guide plate (B) or conveyance guide plate (upper)/(lower), depending upon where the jam occurred.

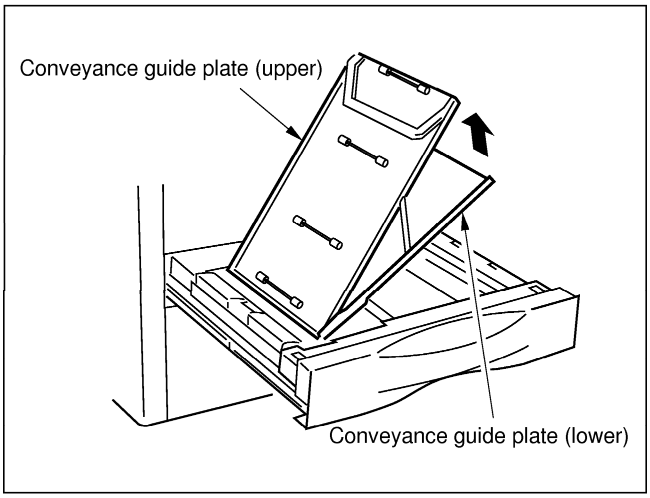
• Selector gate section


Selector gate

• Paper feed unit section


Conveyance guide plate (B)

• Conveyance unit section


Conveyance guide plate (upper)
Conveyance guide plate (lower)

[3] Disassembly and Assembly

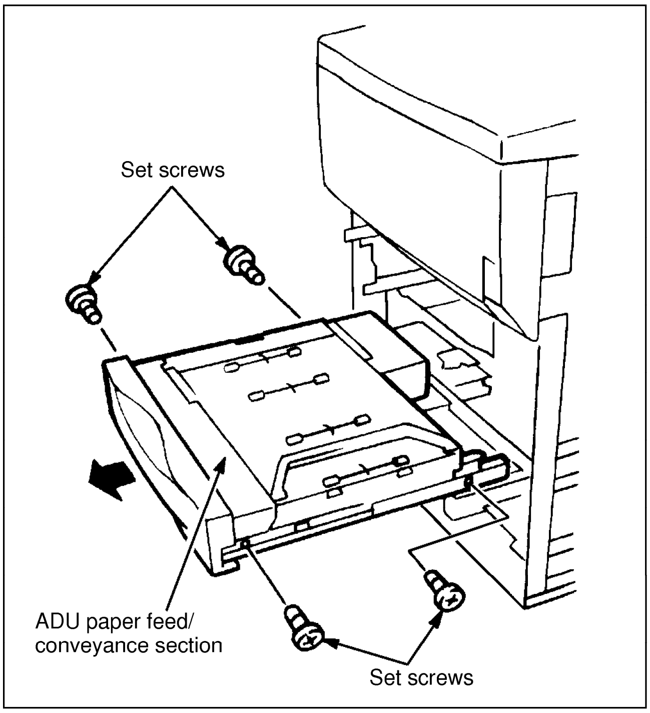
1. Removing and Re-installing the Paper Feed/ Conveyance Section

⚠ Caution: Be sure that the power cord has been unplugged from the power outlet.

a. Procedure

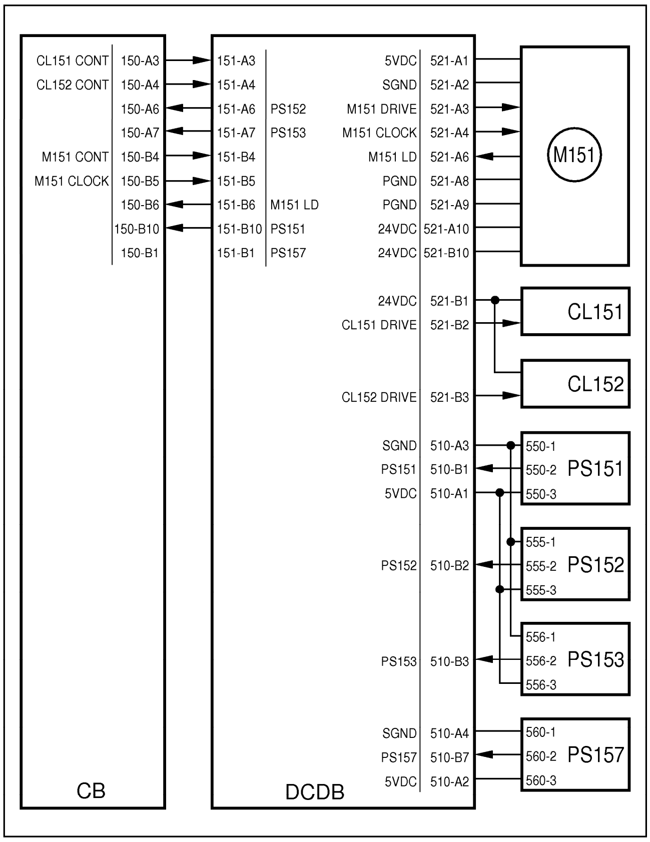
(1) Withdraw the ADU unit, then remove the four set screws.

(2) Completely withdraw the ADU unit, then lift out the ADU unit.


Set screws
ADU paper feed/ conveyance section
Set screws

(2) Re-install the paper feed/conveyance section in the opposite sequence to removal. In this case, however, install the front left and right set screws first.

[4] Paper Feed/Reversal Control


CL151 CONT 150-A3
CL152 CONT 150-A4
150-A6
150-A7
M151 CONT 150-B4
M151 CLOCK 150-B5
150-B6
150-B10
150-B1
151-A3
151-A4
151-A6 PS152
151-A7 PS153
151-B4
151-B5
151-B6 M151 LD
151-B10 PS151
151-B1 PS157
5VDC 521-A1
SGND 521-A2
M151 DRIVE 521-A3
M151 CLOCK 521-A4
M151 LD 521-A6
PGND 521-A8
PGND 521-A9
24VDC 521-A10
24VDC 521-B10
M151
24VDC 521-B1
CL151 DRIVE 521-B2
CL151
CL152 DRIVE 521-B3
CL152
SGND 510-A3
PS151 510-B1
5VDC 510-A1
550-1
550-2 PS151
550-3
PS152 510-B2
555-1
555-2 PS152
555-3
PS153 510-B3
556-1
556-2 PS153
556-3
SGND 510-A4
PS157 510-B7
5VDC 510-A2
560-1
560-2 PS157
560-3
CB
DCDB

The paper feed and reversal operations take place as a result of the transmission of rotational force from M151 (ADU paper feed) to the conveyance roller and the reversal roller by means of CL151 (ADU paper feed) and CL152 (ADU reversal).
M151, CL151 and CL152 are driven by the DCDB (DC drive board) which is controlled by the CB (control board).
Related signals are PS151 (ADU no paper detection), PS152 (ADU paper feed),PS153 (ADU reversal detection) and PS157(ADU gate).

1. Operation

a. Paper feed control

M151 goes ON in synchronism with M1 (main). When PS152 detects the leading edge of the paper conveyed from the ADU paper exit/conveyance section, CL151 goes ON, causing the rotational force of M151 to be transmitted to the conveyance roller. As a result, paper is fed to the stacker from the bottom of the selector gate. CL151 goes OFF after the specified time from when PS152 detects the trailing edge of the paper.
For the second sheet of paper, CL151 goes ON again after the specified time from when CL152 is turned OFF by the passage of the 1st sheet. The same operation is repeated for the subsequent sheets as well.
M151 goes OFF 80 ms after PS19 (optics sync) goes OFF when the series of control operations in the ADU is completed.

b. Reversal control

When CL151 goes OFF, CL152 goes ON after the specified time, and the rotational force of M151 is transmitted to the reversal roller. As a result, the paper in the ADU paper feed section is reversed and conveyed, then exited to the conveyance section. CL152 is turned OFF after the specified time from when PS153 goes OFF as a result of detecting the trailing edge of the paper.

2. Signals

a. Input signals

(1) PS151 (PS151→DCDB→CB)
"No paper in stacker" detection signal
[H]: Paper in stacker
[L]: No paper in stacker

(2) PS152 (PS152→ DCDB→CB)
"Paper at entrance of ADU paper feed/conveyance section" detection signal.
This signal becomes [H] when paper is detected.

(3) PS153 (PS153→DCDB→CB)
"Paper at entrance of ADU paper feed section" detection signal.
This signal becomes [H] when paper is detected.

(4) PS157 (PS157→DCDB→CB)
"Paper jam at border section (paper exit side) of main body and ADU" detection signal.
[H]: Paper in stacker
[L]: No paper in stacker

(5) M151 LD (PS153→DCDB→CB)
This signal becomes [L] when M151 reaches the specified speed.

b. Output signals

(1) M151 CONT (CB→DCDB)
M151 ON/OFF control signal
[H]: M151 OFF
[L]: M151 ON

(2) M151 CLOCK (CB→DCDB→M151)
PLL control clock signal for M151

(3) CL151 CONT (CB→DCDB)
ON/OFF control signal for CL151
[H]: CL151 OFF
[L]: CL151 ON

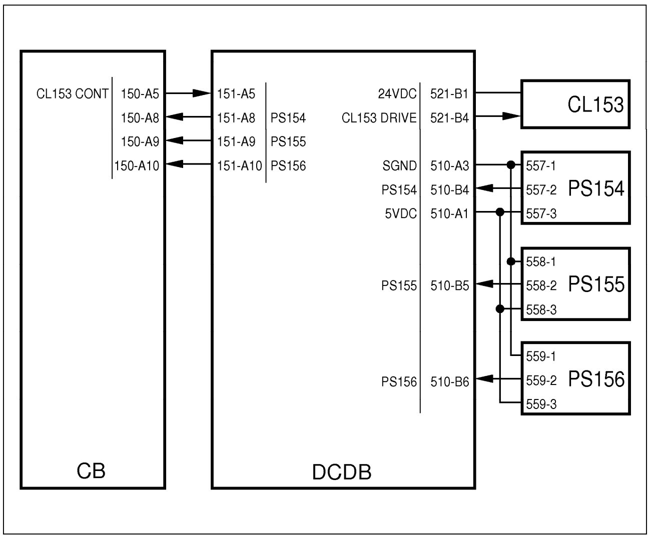
(4) CL152 CONT (CB→DCDB)
ON/OFF control signal for CL152
[H]: CL152 OFF
[L]: CL152 ON

(5) M151 DRIVE (DCDB→M151)
ON/OFF drive signal for M151
[H]: M151 OFF
[L]: M151 ON

(6) CL151 DRIVE (DCDB→CL151)
ON/OFF drive signal for CL151
[H]: CL151 OFF
[L]: CL151 ON

(7) CL152 DRIVE (DCDB→CL152)
ON/OFF drive signal for CL152
[H]: CL152 OFF
[L]: CL152 ON

[5] Conveyance Control


CL153 CONT
150-A5
150-A8
150-A9
150-A10
CB
151-A5
151-A8
151-A9
151-A10
PS154
PS155
PS156
24VDC
CL153 DRIVE
SGND
PS154
5VDC
PS155
PS156
521-B1
521-B4
510-A3
510-B4
510-A1
510-B5
510-B6
DCDB
CL153
557-1
557-2
557-3
PS154
558-1
558-2
558-3
PS155
559-1
559-2
559-3
PS156

Conveyance takes place as a result of the transmission of rotational force from M151 (ADU paper feed) by means of the CL153 (ADU timing).

M151 and CL153 are driven by the DCDB (DC driver board) which is controlled by the CB (control board).

Related signals are PS154 (ADU paper exit 1), PS155 (ADU paper exit 2) and PS156 (ADU paper exit 3).

1. Operation

CL153 goes ON in synchronism with M1 (main), and conveys the reversed paper from the stacker to the main body paper feed unit. If the PS18 (no feed) is ON when PS19 (optical synchronizing) is turned ON, CL153 goes OFF for a moment until PS18 is turned OFF. When PS18 is turned OFF CL153 goes ON again and when PS14 (resistration) is turned OFF by final paper, CL153 goes OFF.

2. Signals

a. Input signals

(1) PS154 (PS154→DCDB→CB)
“Jammed paper at entrance of ADU conveyance section” detection signal.
This signal becomes [L] when paper is detected.

(2) PS155 (PS155→ DCDB→CB)
“Jammed paper inside ADU conveyance section” detection signal.
This signal becomes [L] when paper is detected.

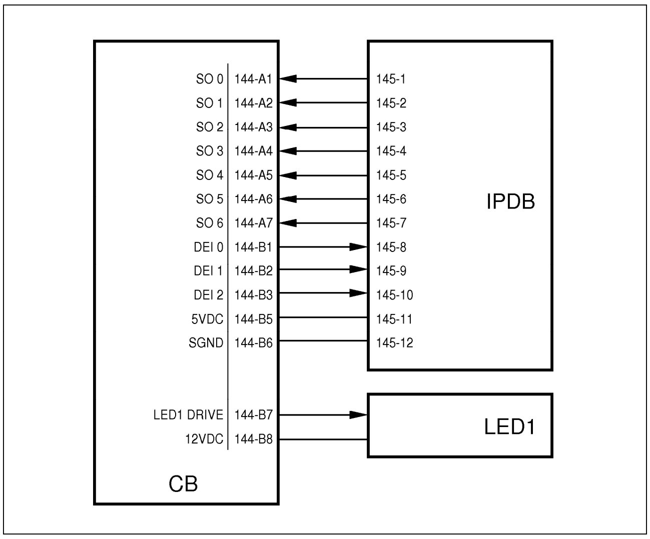
(3) PS156 (PS156→DCDB→CB)
“Jammed paper at exit of ADU conveyance section” detection signal.
This signal becomes [L] when paper is detected.

b. Output signals

(1) CL153 CONT (CB→DCDB)
CL153 ON/OFF control signal
[H]: CL153 ON
[L]: CL153 ON

(2) CL135 DRIVE (DCDB→CL153)
CL153 ON/OFF drive signal
[H]: CL153 OFF
[L]: CL153 ON

[6] ADU Mis-centering Detection Control


SO 0 144-A1
SO 1 144-A2
SO 2 144-A3
SO 3 144-A4
SO 4 144-A5
SO 5 144-A6
SO 6 144-A7
DEI 0 144-B1
DEI 1 144-B2
DEI 2 144-B3
5VDC 144-B5
SGND 144-B6
LED1 DRIVE 144-B7
12VDC 144-B8
CB
145-1
145-2
145-3
145-4
145-5
145-6
145-7
145-8
145-9
145-10
145-11
145-12
IPDB
LED1

The IPDB (mis-centering detection board) detects the rear edge of the paper fed from the ADU, and outputs the paper passage position via the CB (control board) to the IPB (image processing board). During a write operation, the IPB performs mis-centering adjustment of the paper based on this position data.

1. Operation

LED1 consists of a horizontal row of LEDs which light when a paper from ADU turns PS19 (optics synchronizing) ON.(Invisible light because of infrared LED.) IPDB is installed opposite LED1. The paper passage position is detected by counting the number of LEDs being blocked off by the passage of the paper.

2. Signals

a. Input signal

(1) SO 0 to 6 (IPDB→CB)
Paper passage position detection signal

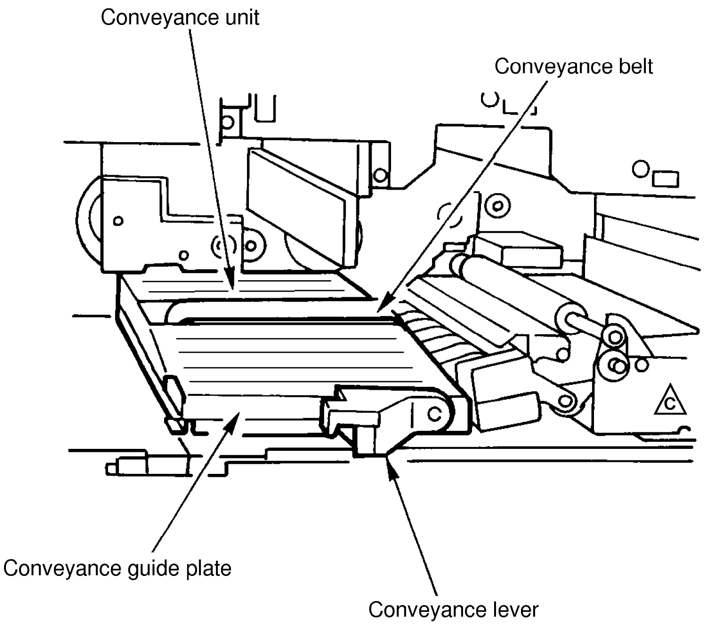
b. Output signals

(1) DEI 0 to 2 (CB→IPDB)
Data send request signal

(2) LED1 DRIVE (CB→IPDB)
[L]: Lit
[H]: Out

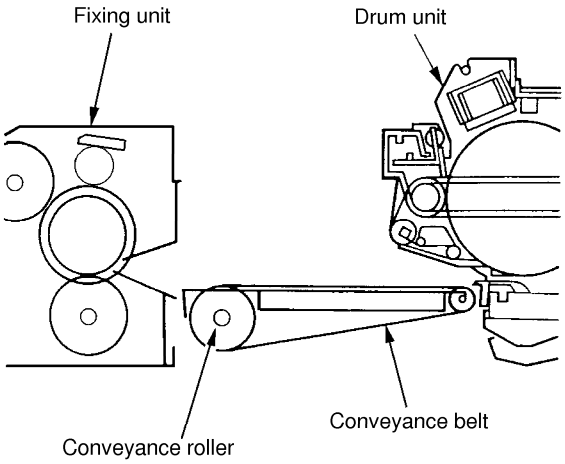
CONVEYANCE SECTION

[1] Composition


Conveyance unit
Conveyance belt
Conveyance guide plate
Conveyance lever

[2] Mechanisms

	Mechanism	Method
*1	Paper conveyance	One conveyance belt


Fixing unit
Drum unit
Conveyance belt
Conveyance roller

*1: Paper conveyance

The paper fed from the 2nd paper feed section is conveyed to the fixing unit by the conveyance belt. The conveyance belt is driven by the main motor. When paper is being conveyed, it is sucked onto the conveyance belt by the conveyance suction motor (FM14) installed beneath the conveyance unit, in order to improve the conveyance performance.

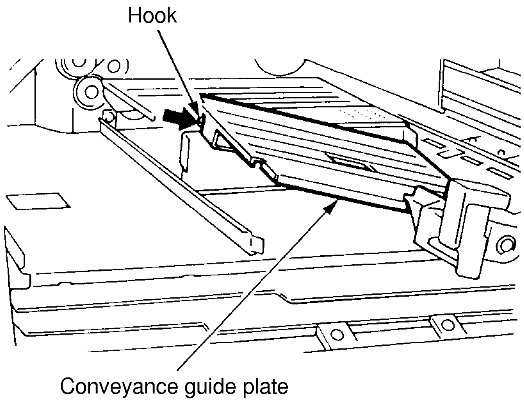
[3] Disassembly and Re-assembly

1. Removing and Re-installing the Conveyance Unit

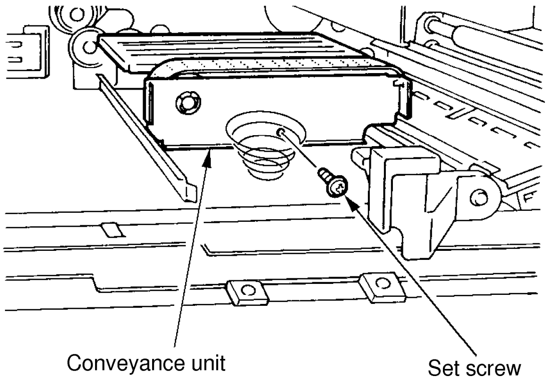
a. Procedure

(1) Open the front door, then remove the drum unit and the fixing unit. (For the method of removing the drum unit, refer to the sub-sections concerning the drum unit and the fixing unit.)

(2) Detach the hook from the left side of the conveyance guide plate, then remove the guide plate while tilting it as shown in the figure below.


Hook
Conveyance guide plate

(3) Remove the set screw, then remove the conveyance unit.


Conveyance unit
Set screw

(4) Install the conveyance unit in the opposite sequence to removal.

2. Replacing the conveyance belt

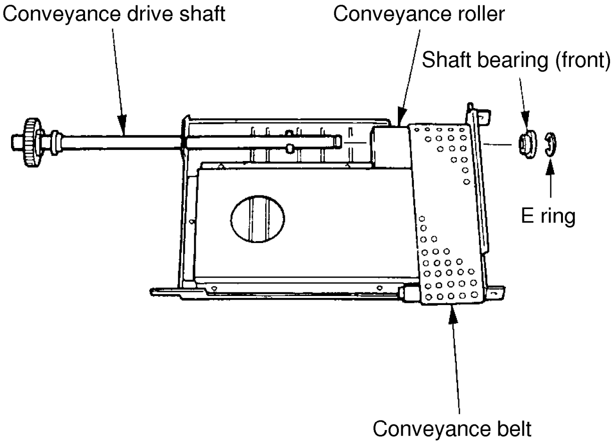
Caution: When removing the conveyance belt, take care not to damage it on the edge of the conveyance unit.

a. Procedure

(1) Remove the conveyance unit.

(2) Remove the E ring, then remove the shaft bearing (front).

(3) Pull out the conveyance drive shaft from the conveyance unit, then remove the conveyance belt.


Conveyance drive shaft
Conveyance roller
Shaft bearing (front)
E ring
Conveyance belt

(4) Re-install the conveyance unit in the opposite sequence to removal.

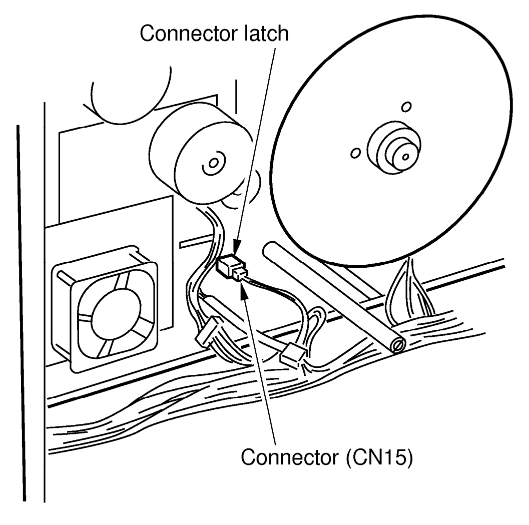
3. Replacing the Conveyance Suction Motor (FM14)

⚠ **Caution: Be sure that the power cord has been unplugged from the power outlet.**

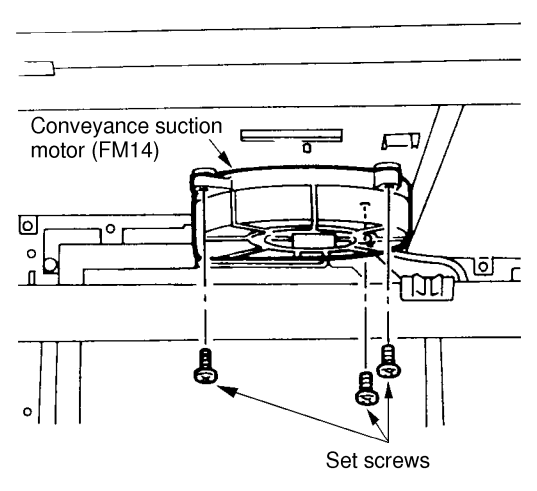
a. Procedure

(1) Open the front door, then remove the upper/lower tray and the paper feed unit.

(2) Open the CB (control board) toward you, then grasp the latch of the connector (CN15) with radio pliers, and push it toward the front of the main body.

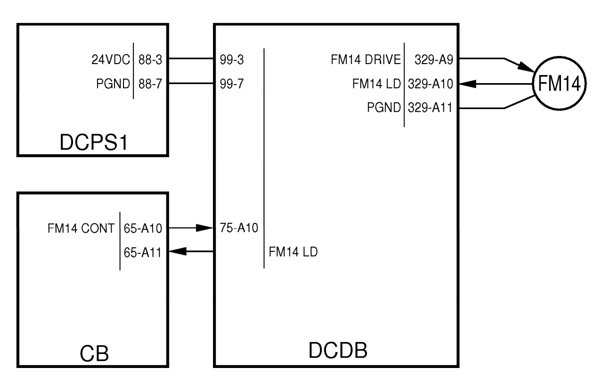

Connector latch
Connector (CN15)

(3) Remove the three set screws, then remove the conveyance suction motor.


Conveyance suction motor (FM14)
Set screws

(4) Re-install the suction motor in the opposite sequence to removal.

[4] FM14 (conveyance suction) Control


24VDC 88-3
PGND 88-7
DCPS1
99-3
99-7
FM14 DRIVE 329-A9
FM14 LD 329-A10
PGND 329-A11
FM14
FM14 CONT 65-A10
65-A11
CB
75-A10
FM14 LD
DCDB

FM14 (conveyance suction) is controlled by the CB (control board) via the DCDB (DC driver board).

1. Operation

FM14 is a 24 V drive DC motor. It goes ON and OFF in synchronism with M4 (main).

2. Signals

a. Input signal

(1) FM14 LD (FM14→DCDB→CB)
This signal becomes [L] when FM14 reaches the specified speed.

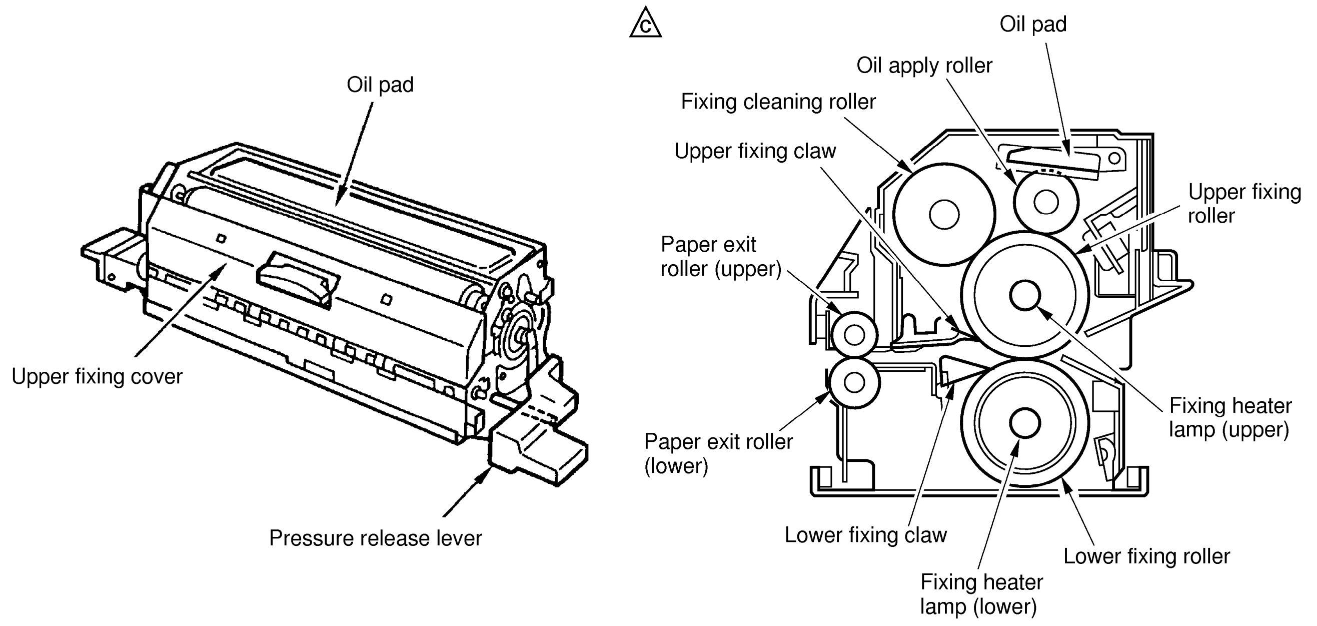
b. Output signals

(1) FM14 CONT (CB→DCDB)
FM14 ON/OFF control signal
[L]: FM14 ON
[H]: FM14 OFF

(2) FM14 DRIVE (DCDB→FM14)
FM14 drive control signal
[L]: FM14 OFF
[H]: FM14 ON

FIXING UNIT

[1] Composition


Oil pad
Upper fixing cover
Pressure release lever
Oil pad
Oil apply roller
Fixing cleaning roller
Upper fixing claw
Upper fixing roller
Paper exit roller (upper)
Fixing heater lamp (upper)
Paper exit roller (lower)
Lower fixing claw
Lower fixing roller
Fixing heater lamp (lower)

[2] Mechanisms

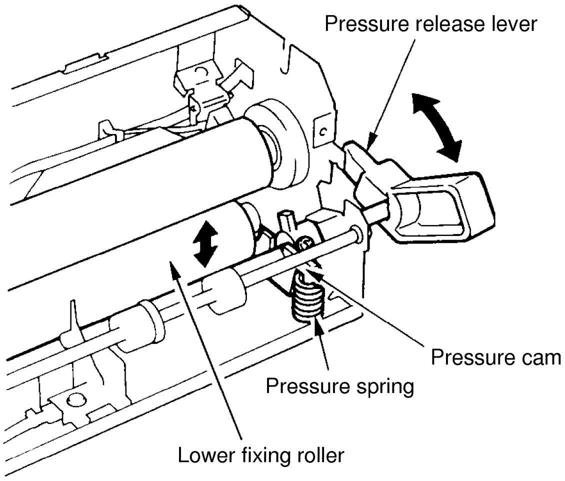
	Mechanism	Method
	Fixing	Pressure + heat roller
*1	Heat source	Heater lamp (one upper and one lower lamp)
	Cleaning	Fixing cleaning roller (silicone oil)
	Upper roller	Aluminium + PFA coating
	Lower roller	Silicone rubber + PFA tube
	Separation	Separation claws (6 upper and 3 lower claws)
	Temperature detection	The following two kinds of thermistors are used: Non-contact thermistor (control sensor) Contact thermistor (abnormal detection sensor)
	Overheating prevention	Non-contact type thermostat 1each for upper and lower.
	Neutralizing	Neutralizing brush
*2	Pressure release	Pressure release cam, spring

*1: Fixing heater lamps

The fixing heater lamps consists of two halogen lamps (one for the upper fixing roller and one for the lower fixing roller). They are intended to reduce the warmup time from when the machine is switched ON.

*2: Lower roller pressing and release

When you move the pressure release lever in the fixing or release direction, the pressure cam pushes the pressure spring up or down, causing the lower roller to be pressurized or released.


Pressure release lever
Pressure cam
Pressure spring
Lower fixing roller

[3] Disassembly and Re-assembly

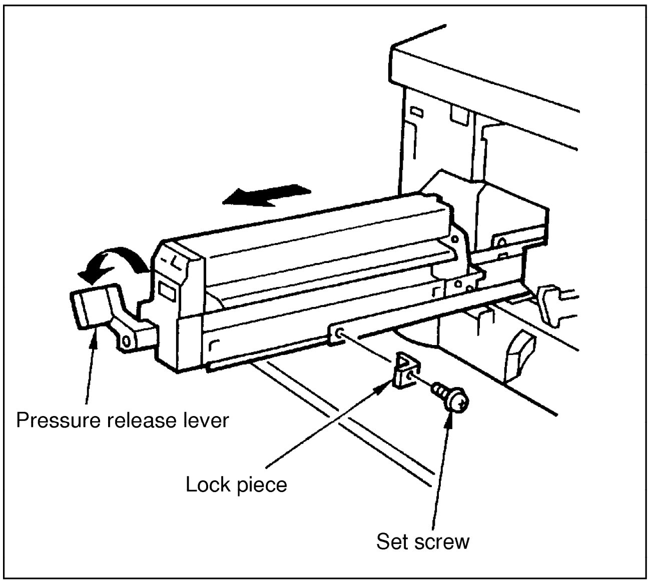
1. Removing and Re-installing the Fixing Unit

⚠ Caution:

1. **Be sure that the power cord has been unplugged from the power outlet.**
2. **Do not touch the fixing unit immediately after turning OFF the main switch because it is very hot and you may receive a burn. Wait until the fixing unit has cooled down sufficiently before working on it.**

a. Procedure

(1) Open the front door, then move the pressure release lever to the release side.
(2) Grasp the pressure release lever, then pull it output until it locks.
(3) Remove the set screw, then remove the lock piece.
(4) Pull out the fixing unit further, and remove it.



(5) Re-install the fixing unit in the opposite sequence to removal.

2. Replacing the Fixing Heater Lamp (upper)

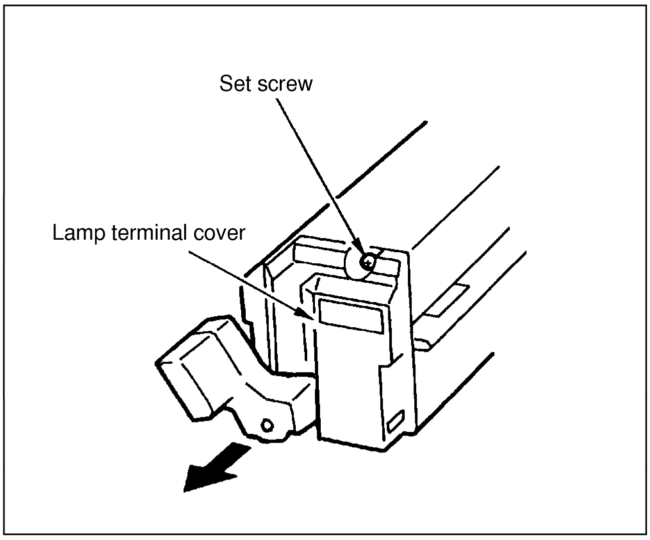
⚠ Caution: Do not touch the fixing heater lamp (upper) with the bare hands.

Caution:

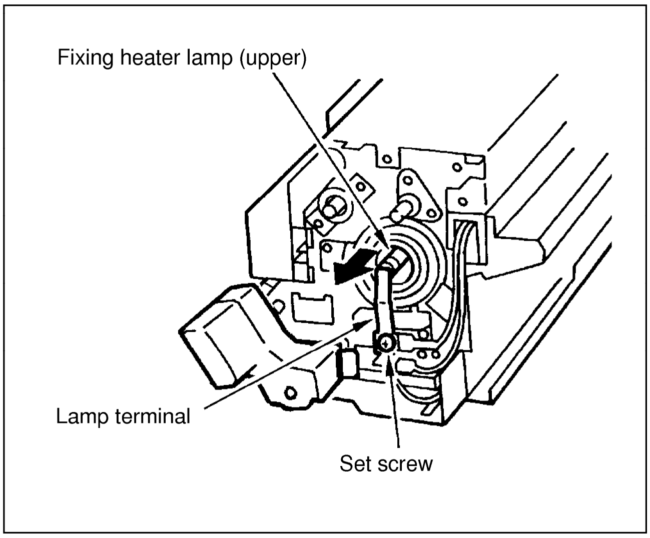
1. Install the fixing heater lamp with the makers mark facing the drive gear side.
2. When installing the fixing heater lamp, ensure that the ends of the lamp are facing the correct direction.
3. After replacing the fixing heater lamp, check to ensure that the ends of the lamp are properly inserted in the terminals.

a. Procedure

(1) Remove the fixing unit.
(2) Remove the set screw, then remove the lamp terminal cover.



(3) Remove the set screw, then remove the lamp terminal.
(4) Pull out the fixing heater lamp (upper) from the upper fixing roller.



(5) Re-install the fixing lamp (upper) in the opposite sequence to removal.

3. Replacing the Fixing Heater Lamp (lower)

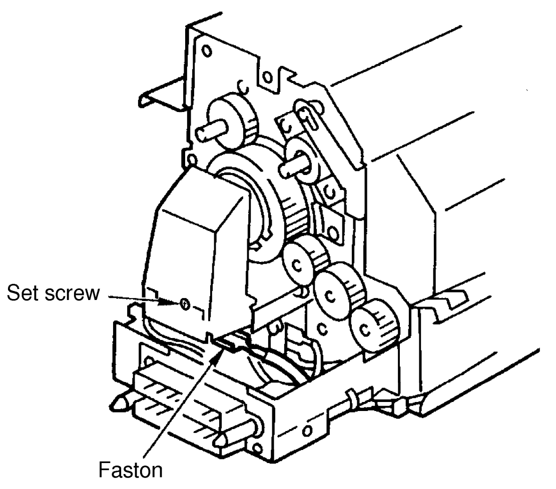
⚠ **Caution: Do not touch the fixing heater lamp (lower) with the bare hands.**

Caution: When disconnecting the faston of the fixing heater lamp, be sure to use radio pliers and take care not to apply an unreasonable force to the mating part because it may break.

a. Procedure

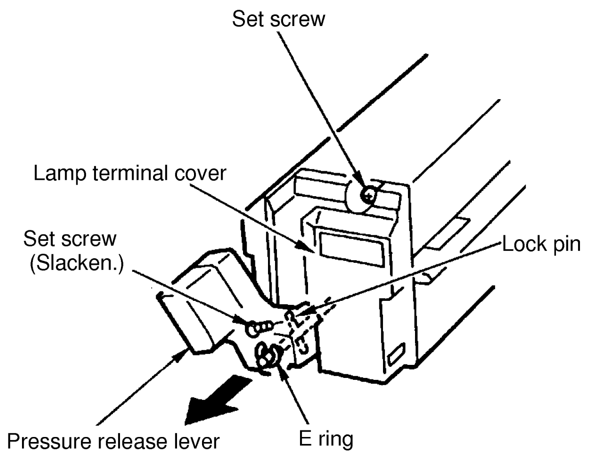
(1) Remove the fixing unit from the main body.

(2) Remove the set screw, then remove the lamp terminal cover.


Set screw
Faston

(3) Disconnect the faston from the fixing heater lamp (lower). (rear side)

(4) Slacken the set screw, then remove the E ring, and remove the pressure release lever.

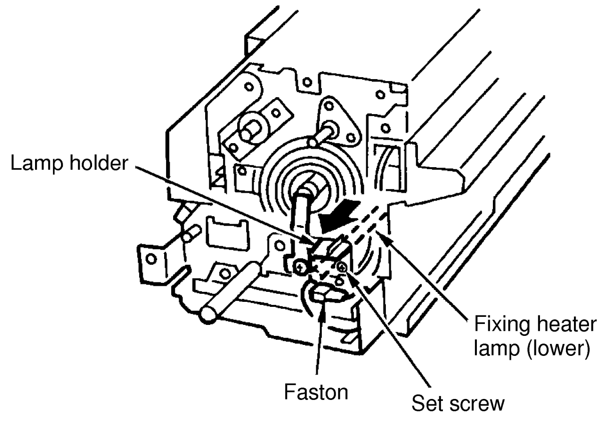

Set screw
Lamp terminal cover
Set screw (Slacken.)
Lock pin
Pressure release lever
E ring

Caution: A lock pin is inserted in the pressure release lever, so take care not lose it.

(5) Disconnect the faston from the fixing heater lamp (lower). (front side)

(6) Remove the set screw, then remove the lamp holder.

(7) Pull out the fixing heater lamp (lower) from the lower fixing roller.


Lamp holder
Fixing heater lamp (lower)
Faston
Set screw

(8) Re-install the fixing heater lamp (lower) in the opposite sequence to removal.

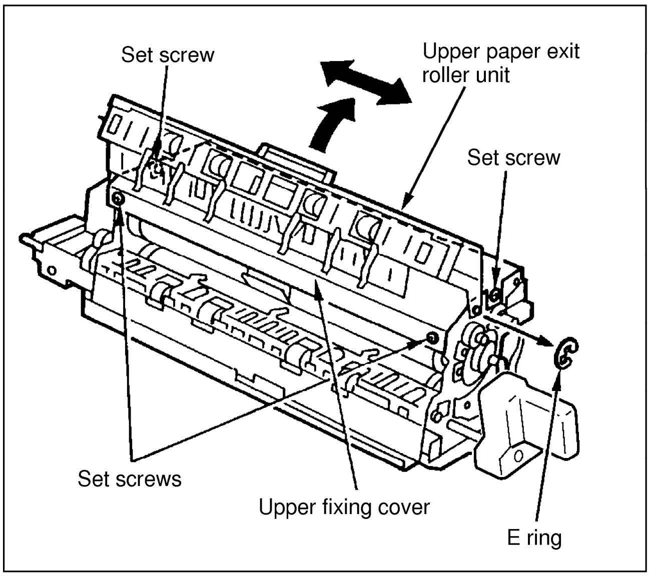
4. Replacing the Oil Pad

a. Procedure

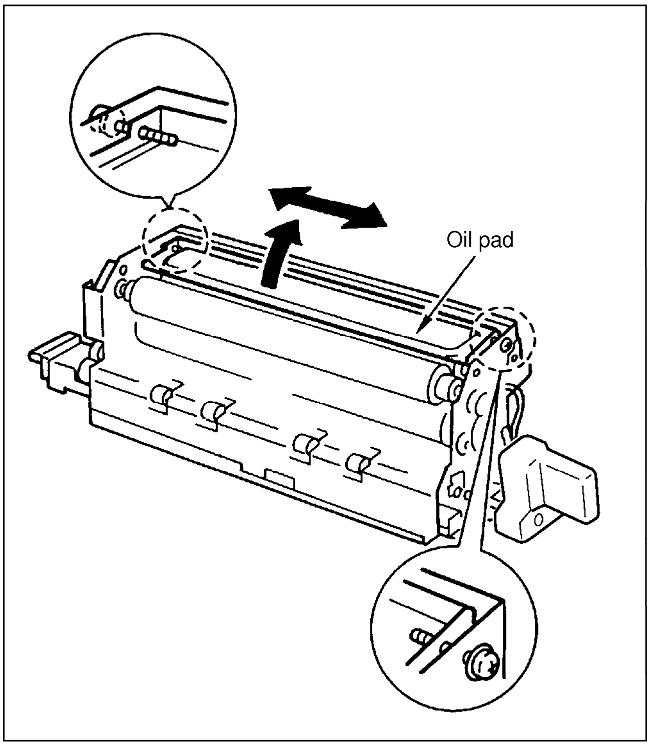
(1) Remove the fixing unit.

(2) Remove the E ring, then remove the upper paper exit roller unit.

(3) Remove the four set screws, then remove the upper fixing cover.


Set screw
Upper paper exit roller unit
Set screw
Set screws
Upper fixing cover
E ring

(4) Open the oil pad to the upper side, then slide it left and right, and remove it.



(5) Re-install the oil pad in the opposite sequence to removal.

5. Replacing the Fixing Cleaning Roller and Oil Apply Impregnated Roller

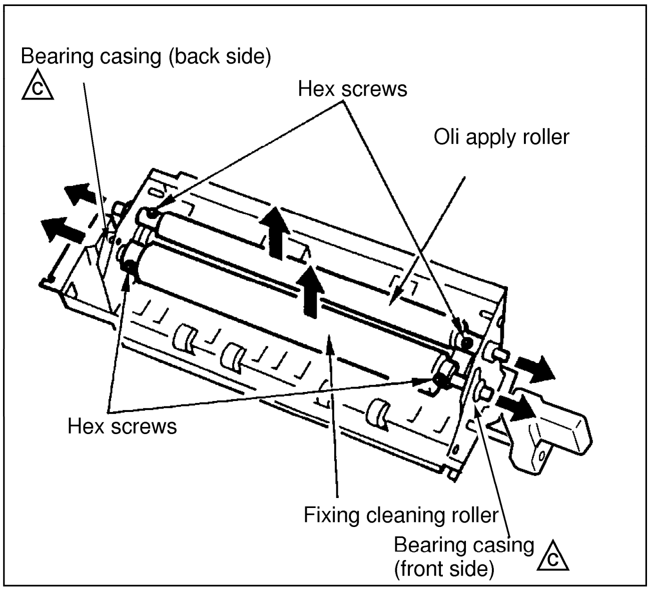
Caution: When re-installing the fixing cleaning roller and fixing impregnated roller, tighten the hex screws harder than normal.

a. Procedure

(1) Remove the upper paper exit roller unit, upper fixing cover and oil pad.

(2) Remove the two hex screws, then pull out the shaft to the outside, and remove the fixing impregnated roller.

(3) Loosen the four bearing casing screws (2 each for front and back side) to remove the two hex screws. Then pull out the shaft to the outside, and remove the fixing cleaning roller.


Bearing casing (back side)
Hex screws
Oli apply roller
Hex screws
Fixing cleaning roller
Bearing casing (front side)

(4) Re-install the rollers in the opposite sequence to removal.
When re-installing, care should be taken for the following items.

Note:

1. The shaft must be inserted into the fixing cleaning roller until the shaft collar reaches the roller core, then tighten the push screw.

2. Fix the bearing casing screw after confirming that the bearing casing reaches the flat metal edge on the fixing roller side.

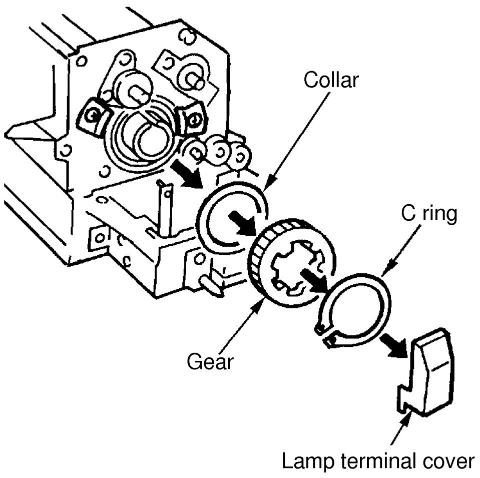
6. Removing and Re-installing the Upper Fixing Roller

Caution: When replacing the heat insulation sleeves, coat the inside and the outside of the sleeves with “TORIFURON”, then fit the sleeves onto the roller shaft.

a. Procedure

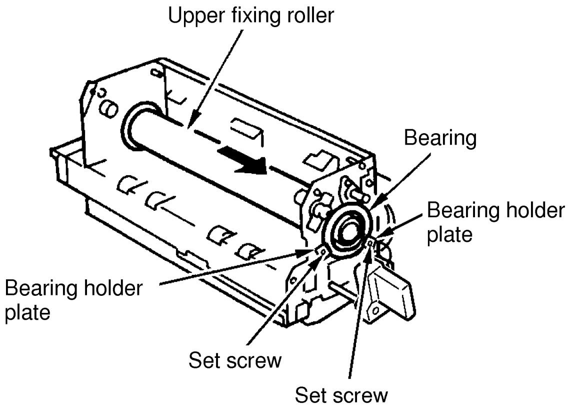
(1) Remove the upper paper exit roller unit, upper fixing cover, oil pad, fixing heater lamp (upper), fixing cleaning roller and oil apply roller.

(2) Remove the lamp terminal cover at the rear, then remove the C ring, collar and gear from the upper fixing roller.

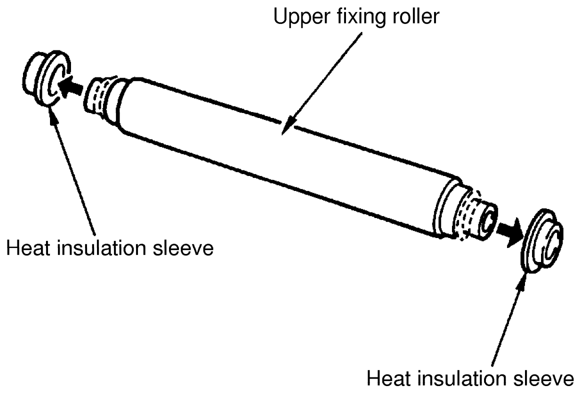

Collar
C ring
Gear
Lamp terminal cover

(3) Remove the two set screws at the front, then remove the two bearing holder plates.

(4) Remove the bearing, then pull out the upper fixing roller from the front.


Upper fixing roller
Bearing
Bearing holder plate
Bearing holder plate
Set screw
Set screw

(5) Remove the two heat insulation sleeves from the upper fixing roller.


Upper fixing roller
Heat insulation sleeve
Heat insulation sleeve

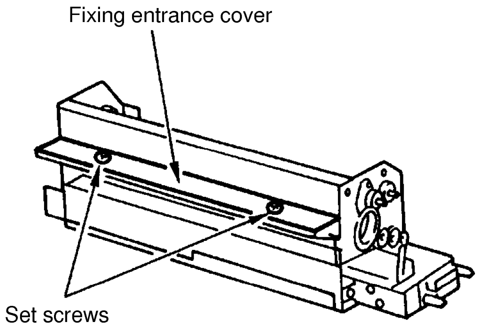
(6) Re-install the upper fixing roller in the opposite sequence to removal.

7. Removing and Re-installing the Lower Fixing Roller

a. Procedure

(1) Remove the fixing heater lamp (upper), fixing heater lamp (lower) and upper fixing roller.

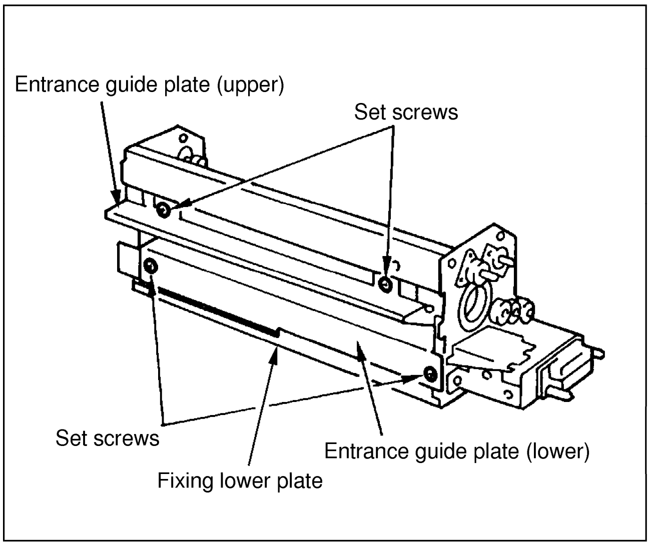
(2) Remove the two set screws, then remove the fixing entrance cover.


Fixing entrance cover
Set screws

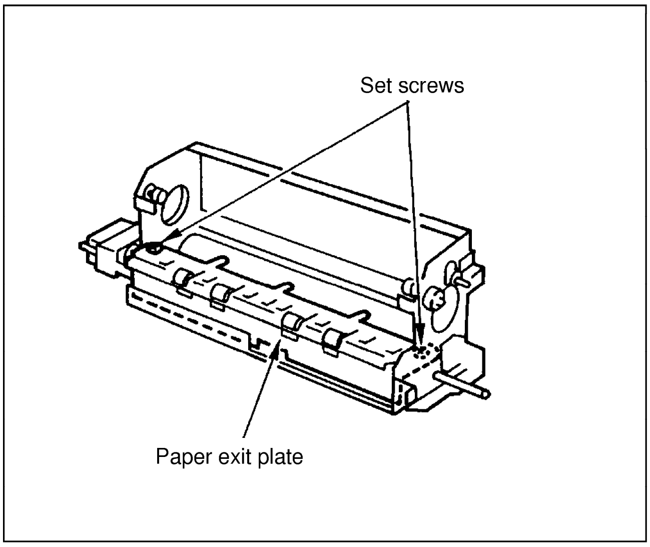
(3) Remove the two set screws, then remove the entrance guide plate (upper).

(4) Remove the two set screws, then remove the entrance guide plate (lower).

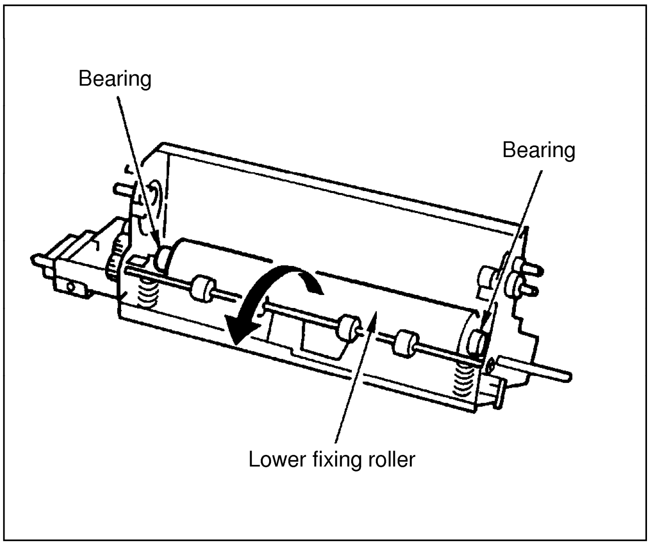
Note: When installing the lower fixing roller, lower the entrance guide plate(upper)to the bottom and fix it. And lower the entrance guide plate (lower) to the bottom, ensure that it is touching the fixing bottom plate, then fix it.


Entrance guide plate (upper)
Set screws
Set screws
Entrance guide plate (lower)
Fixing lower plate

(5) Remove the two set screws, then remove the paper exit plate.


Set screws
Paper exit plate

(6) Raise the lower fixing roller, then remove it from the paper exit side.
(7) Remove the two bearings from the lower fixing roller.

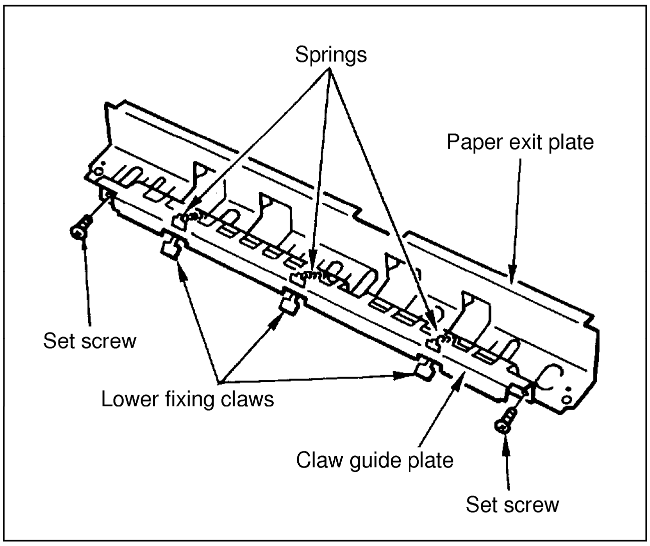

Bearing
Bearing
Lower fixing roller

(8) Re-install the lower fixing roller in the opposite sequence to removal.

8. Removing and Re-installing the Lower Fixing Claws

a. Procedure

(1) Remove the paper exit plate.
(2) Remove the three springs supporting the lower fixing claws.
(3) Remove the two set screws, then remove the claw guide plate.
(4) Remove the three lower fixing claws.


Springs
Paper exit plate
Set screw
Lower fixing claws
Claw guide plate
Set screw

(5) Re-install the lower fixing claws in the opposite sequence to removal.

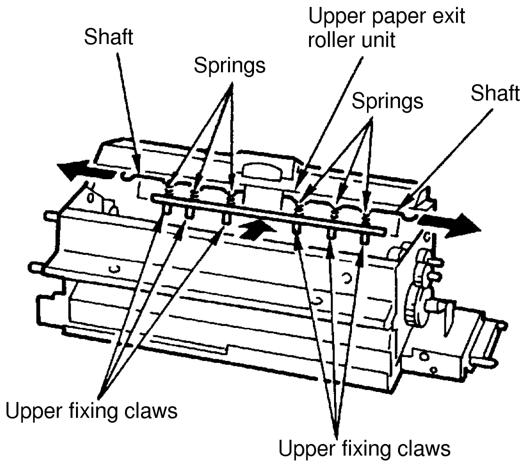
9. Removing and Re-installing the Upper Fixing Claws

a. Procedure

(1) Open the upper paper exit roller unit.

(2) Remove the six springs attached to the upper fixing claws.

(3) Pull out the two shafts, each of which has three upper claws fixed to it, to the outside, and remove the six upper fixing claws.


Shaft
Springs
Upper paper exit roller unit
Springs
Shaft
Upper fixing claws
Upper fixing claws

(4) Re-install the upper fixing claws in the opposite sequence to removal.

10. Removing and Re-installing Fixing Temperature Sensors 1 and 2

⚠ **Caution:**

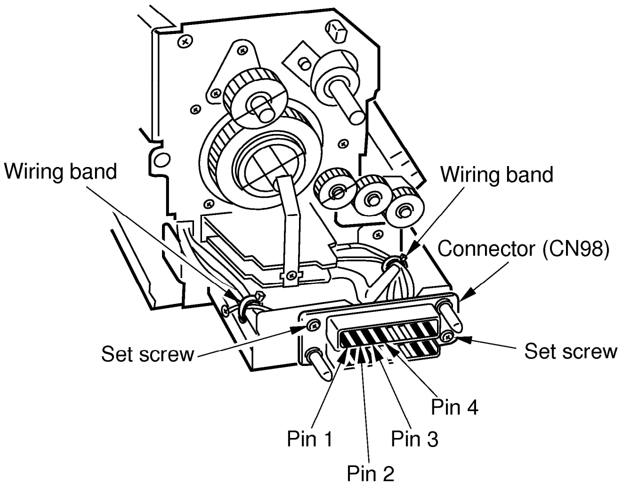
1. **After re-installing fixing temperature sensors 1 and 2, check to ensure that the sensor wires are not touching the upper fixing roller.**
2. **After re-installing fixing temperature sensor 2, check to ensure that the sensor is not touching the upper fixing roller.**
3. **Be sure to coat the set screws of the sensors with screw lock agent after re-installing the sensors.**

a. Removal procedure

(1) Remove the upper paper exit roller unit, upper fixing cover, oil pad, oil apply roller and entrance guide plate (lower).

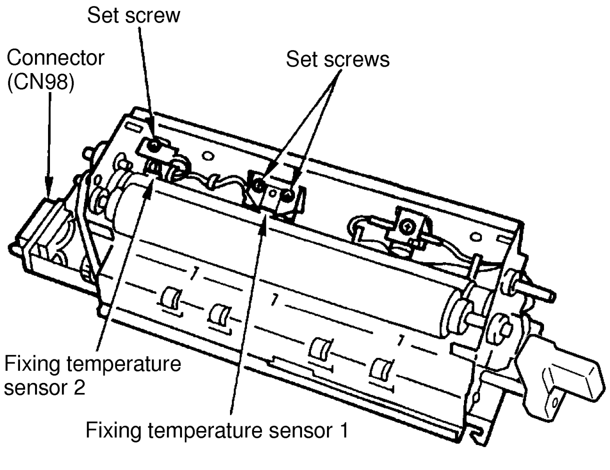
(2) Remove the two set screws, then release the connector (CN98).

(3) Cut the two wiring bands, then remove pins 1 to 4 of CN98 with a tweezers.


Wiring band
Wiring band
Connector (CN98)
Set screw
Set screw
Pin 4
Pin 1
Pin 3
Pin 2

(4) Remove the two set screws, then remove fixing temperature sensor 1.

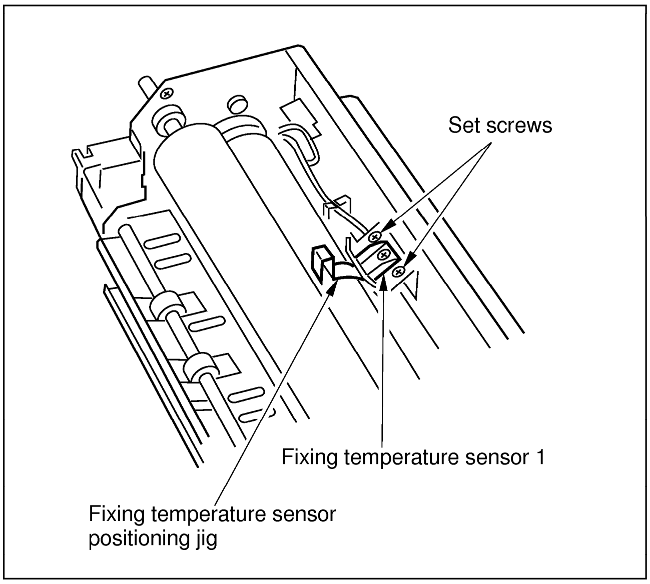
(5) Remove the set screw, then remove fixing temperature sensor 2.


Set screw
Connector (CN98)
Set screws
Fixing temperature sensor 2
Fixing temperature sensor 1

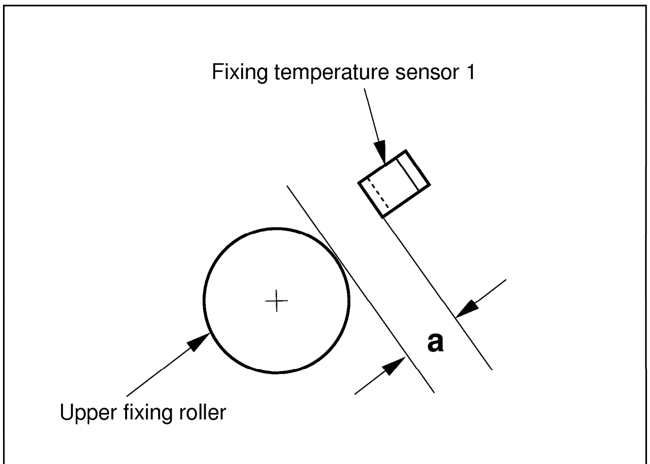
b. Installation procedure

(1) Fix fixing temperature sensor 2 with the set screw, then place the sensor element in contact with the upper fixing roller.

(2) Set the fixing temperature sensor positioning jig between fixing temperature sensor 1 and the upper fixing roller, then fix fixing temperature sensor 1 with two set screws so that the clearance between the sensor and the upper fixing roller is within the standard value.


Set screws
Fixing temperature sensor 1
Fixing temperature sensor positioning jig

(a) Set the distance 'a' between the upper fixing roller and fixing temperature sensor 1 so that it is equal to the thickness of the fixing tempera ture sensor positioning jig.



Standard: a =0.75±0.1mm(When Pressurized)

(3) Coat the set screw of each sensor with screw lock agent.

(4) Insert the connector pins on the end of the cable of each sensor to a position that corresponds to CN98.

(5) Re-install the other parts in the opposite sequence to removal.

11.Removing and Re-installing the Thermostat (upper)

⚠ Caution:

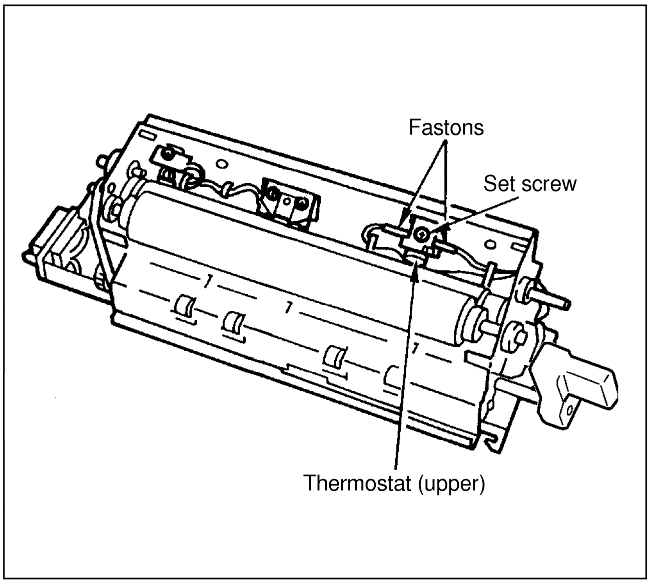
1. **After re-installing the thermostat (upper), check to ensure that the wiring is not touching the upper fixing roller.**
2. **Be sure to coat the set screw of the thermostat (upper) with screw lock agent after re-installing the thermostat.**

a. Removal procedure

(1) Remove the upper paper exit roller unit, upper fixing cover, oil pad and fixing impregnated roller.

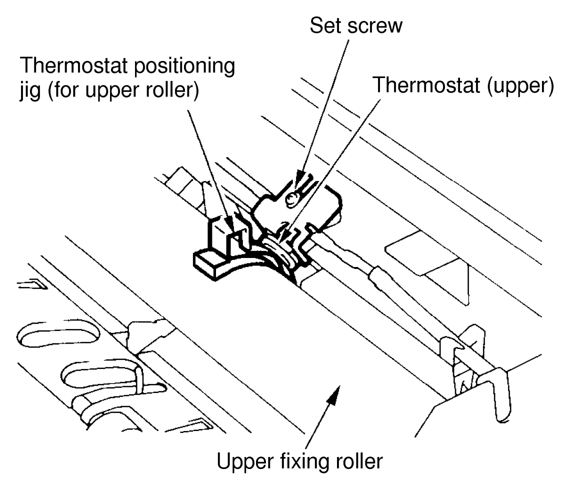
(2) Disconnect the two fastons from the thermostat (upper).

(3) Remove the set screw, then remove the thermostat (upper).

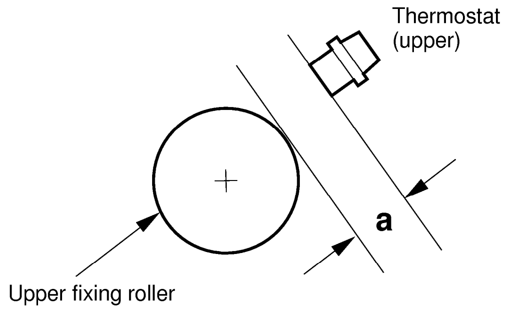


b. Installation procedure

(1) Set the thermostat positioning jig (for the upper fixing roller) between the thermostat (upper) and the upper fixing roller, then fix the thermostat (upper) with the set screw so that the clearance between the thermostat (upper) and the upper fixing unit is the standard value.

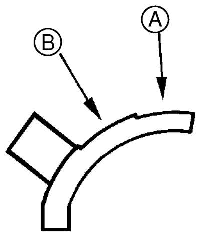

Set screw
Thermostat positioning jig (for upper roller)
Thermostat (upper)
Upper fixing roller

(a) Set the distance ‘a’ between the upper fixing roller and the thermostat (upper) so that it is equal to the thickness of thermostat positioning jig Ⓐ.


Thermostat (upper)
a
Upper fixing roller

Standard: a = 3.75 ± 0.25mm(When Pressurized)

(b) When adjusting the distance, should not be allowed to run up over Ⓑ.



(2) Coat the set screw of the installed thermostat (upper) with screw lock agent.
(3) Connect the two fastons.
(4) Install the other parts in the opposite sequence to removal.

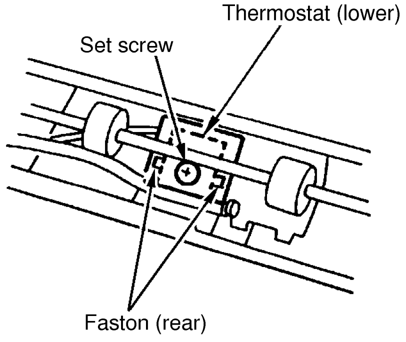
12. Removing and Re-installing the Thermostat (lower)

⚠ Caution:

1. **After installing the thermostat (lower), ensure that the wiring is not touching the lower fixing roller.**
2. **Be sure to coat the set screw of the installed thermostat (lower) with screw lock agent.**

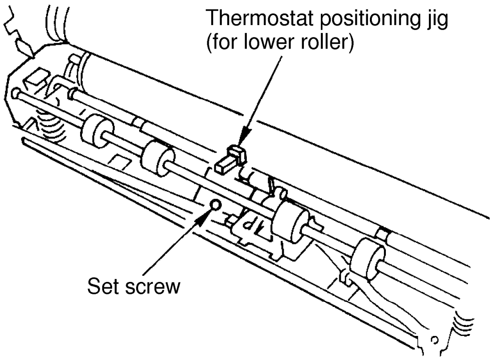
a. Removal procedure

(1) Remove the upper paper exit roller unit, upper fixing cover and paper exit plate.
(2) Disconnect the two fastons from the thermostat (lower).
(3) Remove the set screw, then remove the lower thermostat (lower).

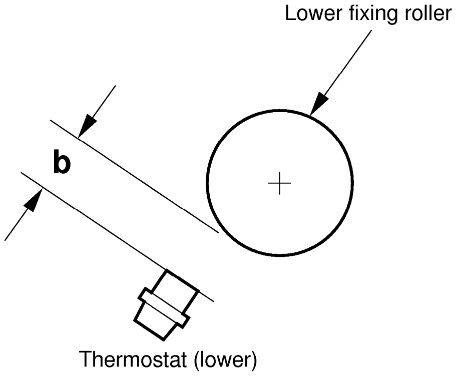

Thermostat (lower)
Set screw
Faston (rear)

b. Installation procedure

(1) Set the thermostat positioning jig (for the lower fixing roller) between the thermostat (lower) and the lower fixing roller, then fix the thermostat (lower) with the set screw so that the clearance between the thermostat (lower) and the lower fixing unit is the standard value.

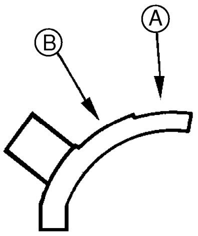

Thermostat positioning jig
(for lower roller)
Set screw

(a) Set the distance “b” between the lower fixing roller and the thermostat (lower) so that it is equal to the thickness of thermostat positioning jig Ⓐ.


Lower fixing roller
b
Thermostat (lower)

Standard: b = 1.75 ± 0.2mm(When Pressurized)

(b) When adjusting the distance, should not be allowed to run up over Ⓑ.

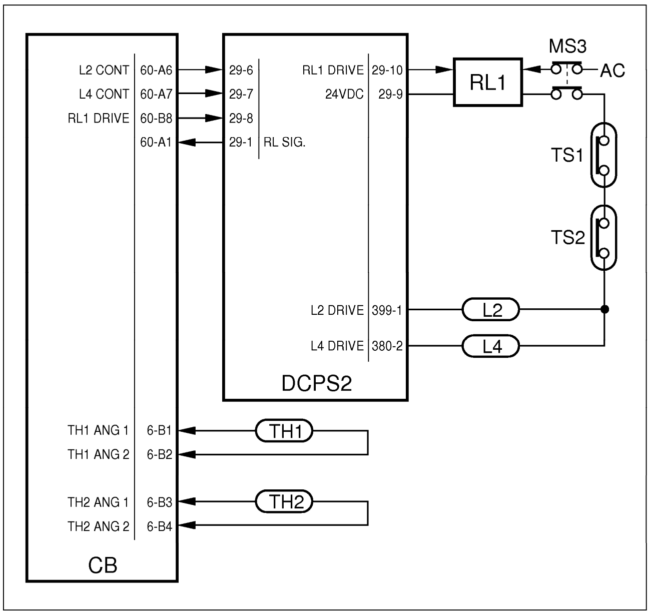


(2) Coat the set screw of the installed thermostat (lower) with screw lock agent.

(3) Connect the two fastons.

(4) Re-install the other parts in the opposite sequence to removal.

[4] Fixing Temperature Control



The upper fixing roller is heated by L2 (fixing heater lamp (upper)), and the lower fixing roller by L4 (fixing heater lamp (lower)). The CB detects the temperature of the upper fixing roller by means of TH1 (fixing temperature (middle)), and controls L2 and L4 via DCPS2.

1. Operation

a. Temperature control

(1) Warmup

The CB (control board) turns ON the fixing heater lamp circuit in DCPS2 (DC power supply unit 2) as soon as the main switch is turned ON, causing L2 and L4 to go ON until the upper fixing roller reaches the specified temperature. During warming up and idling condition, L4 goes ON and OFF in synchronism with L2. If the upper fixing roller does not reach the specified temperature within a certain time from the start of warmup, L2 and L4 remain ON and also M1 (main) goes ON until the completion of warmup.

(Set Temperature)
200°C
(Warm up time)
Approx. 7min.(Room temp : 20°C)

MODE \ Lamp	L2	L4
Waming up	ON/OFF	ON/OFF
in copying	ON/OFF	OFF

b. Protection against abnormality

TS1 (thermostat (upper)) is used to prevent the temperature of the upper fixing roller from rising abnormally, and TS2 (thermostat (lower)) is used to prevent the temperature of the lower fixing roller from rising abnormally. These thermostats are in contact with the respective rollers.

The operating temperature of each thermostat is shown below.

TS1: Approx. 180°C
TS2: Approx. 110°C

c. MS3 (fixing set MS3)

The fixing heater remains energized even if the main door is opened, however if the fixing pressure lever is moved to the release side MS3 goes OFF and the flow of current to the fixing heater is cut off.

2. Signals

a. Input signals

(1) TH1 ANG 1, 2 (TH1→CB)

TH1 output signal

This signal outputs a voltage that is proportional to the surface temperature at the center of the upper fixing roller.

This signal is used for temperature control and also for detecting an abnormally high temperature or other abnormality.

(2) TH2 ANG 1, 2 (TH2→CB)

TH2 output signal

This signal outputs a voltage proportional to the surface temperature at the end of the upper fixing roller. It is not directly related to temperature control but is used for detecting an abnormality.

b. Output signals

(1) L2 CONT (CB→DCPS2)

Signal which controls the ON/OFF state of L2
[L]: L2 ON
[H]: L2 OFF

(2) L4 CONT (CB→DCPS2)

Signal which controls the ON/OFF state of L4
[L]: L4 ON
[H]: L4 OFF

(3) L2 DRIVE (DCPS2→L2)

L2 AC(N) supply line.

The AC supply is switched ON or OFF according to L2 CONT.

(4) L4 DRIVE (DCPS2→L4)

L4 AC(N) supply line.

The AC supply is switched ON or OFF according to L4 CONT.

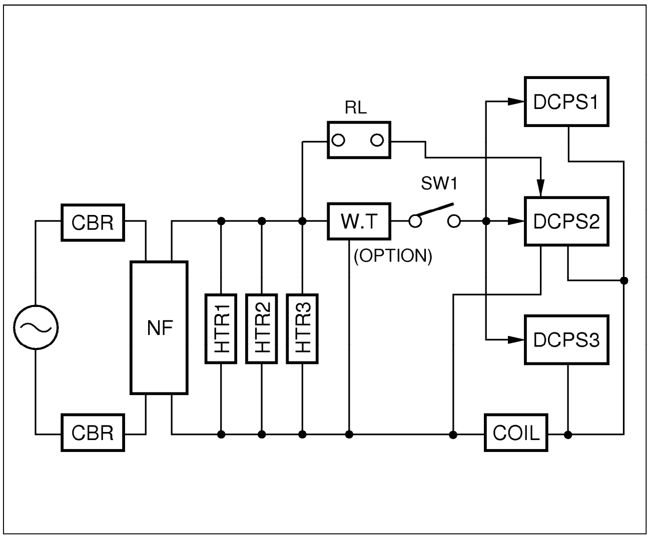
(5) RL1 DRIVE (CB→DCPS2→RL1)

Signal which controls RL1.

This signal becomes [H] if an abnormality occurs in the machine, causing RL1 to go OFF.

OTHER KINDS OF CONTROL

[1] Parts Through Which Current Flows When the Main Switch is Turned OFF


RL
DCPS1
SW1
CBR
W.T
DCPS2
(OPTION)
NF
HTR1
HTR2
HTR3
DCPS3
CBR
COIL

1. Operation

Current flows through the following parts if the power cord is plugged into the power outlet, regardless of whether or not SW1 (main) is ON or OFF.

a. CBR (breaker)

If an internal part short circuits, causing a current of more than 8 A to flow, the breaker goes OFF, cutting off the power to the machine.

b. NF (noise filter)

The noise filter is used to reduce noise entering the machine via the power line, and also external leakage of noise generated in the machine.

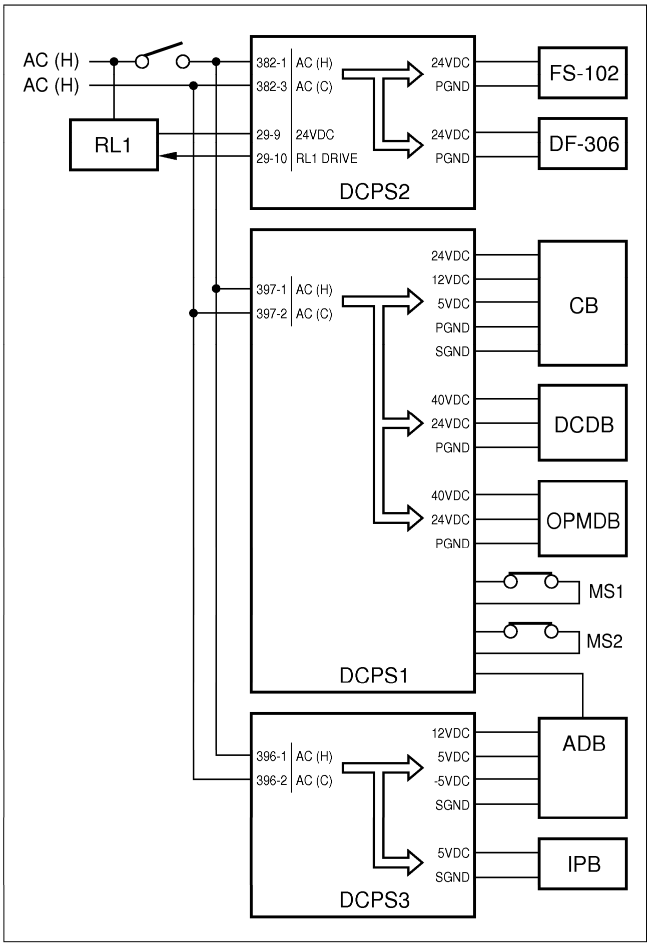
c. HTR1, 2, 3 (internal heaters 1, 2 and 3)

These heaters are used to remove humidity from the paper feed tray and the inside of the LCT.

d. W.T. (weekly timer (optional))

This timer uses various time control functions to switch the machine ON and OFF.

[2] Parts That Operate When the Main Switch is Turned ON


AC (H)
AC (H)
RL1
382-1 AC (H)
382-3 AC (C)
29-9 24VDC
29-10 RL1 DRIVE
24VDC
PGND
24VDC
PGND
DCPS2
FS-102
DF-306
397-1 AC (H)
397-2 AC (C)
24VDC
12VDC
5VDC
PGND
SGND
CB
40VDC
24VDC
PGND
DCDB
40VDC
24VDC
PGND
OPMDB
MS1
MS2
DCPS1
396-1 AC (H)
396-2 AC (C)
12VDC
5VDC
-5VDC
SGND
ADB
5VDC
SGND
IPB
DCPS3

1. Operation

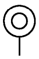
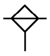
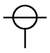
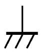
a. Power supply

When SW1 (main) is turned ON, AC power is supplied to DCPS1, 2 and 3 (DC power units 1, 2 and 3). As a result, DCPS1 supplies DC power to the CB (control board), DCDB (DC driver board) and ADB (A/D converter board). The CB starts controlling the internal circuits and also starts the following operations.

- Initial operation of OB (operation board)
- Warmup of the fixing rollers
- Low speed operation of the various fans

DCPS2 supplies 24DC to RL1, FS-102 and DF-306. RL1 turns on after a centain period by a signal from CB, then supplies AC power to AC-driven parts.

DC output voltages and corresponding symbols

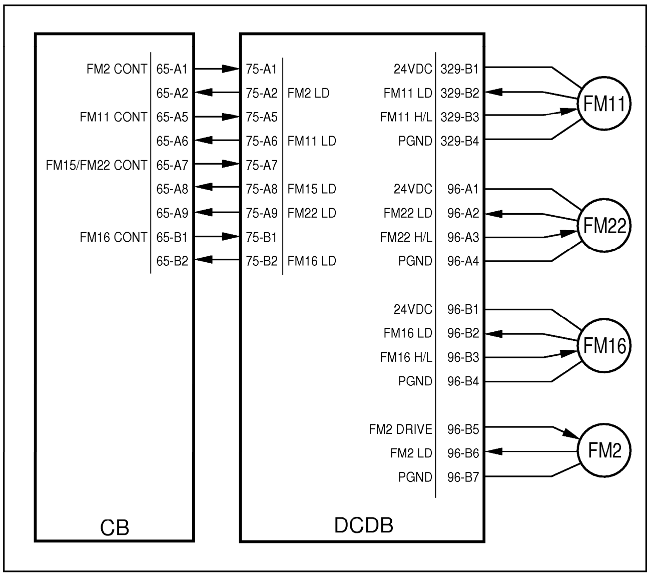
Output	Symbol
40VDC	
24VDC	
12VDC	
5VDC	
SGND	
PGND	

2. Signals

a. Output signal

(1) RL1 DRIVE (CB→DCPS2)
Signal which controls RL1.
If an abnormality occurs in the main body, this signal becomes [H], causing RL1 to go OFF.

[3] Cooling Fan Control


FM2 CONT
65-A1
65-A2
FM11 CONT
65-A5
65-A6
FM15/FM22 CONT
65-A7
65-A8
65-A9
FM16 CONT
65-B1
65-B2
CB
75-A1
75-A2
FM2 LD
75-A5
75-A6
FM11 LD
75-A7
75-A8
FM15 LD
75-A9
FM22 LD
75-B1
75-B2
FM16 LD
DCDB
24VDC
329-B1
FM11 LD
329-B2
FM11 H/L
329-B3
PGND
329-B4
FM11
24VDC
96-A1
FM22 LD
96-A2
FM22 H/L
96-A3
PGND
96-A4
FM22
24VDC
96-B1
FM16 LD
96-B2
FM16 H/L
96-B3
PGND
96-B4
FM16
FM2 DRIVE
96-B5
FM2 LD
96-B6
PGND
96-B7
FM2

FM11 (polygon cooling fan), FM22 (E-RDH cooling fan), FM16 (main body cooling fan) and FM2 (optics cooling fan) are driven by the DCDB (DC driver board) which is controlled by the CB (control board).

1. Operation

A 24 V DC motor is used for each cooling fan.

a. Operation of FM11

During idling: Low speed rotation
During a copy operation: High speed rotation

b. Operation of FM22

During idling: Low speed rotation
During a copy operation: High speed rotation

c. Operation of FM16

During idling: Low speed rotation
During a copy operation: High speed rotation

d. Operation of FM2

ON only during a copy operation.

2. Signals

a. Output signals

(1) FM2 CONT (CB→DCDB)
ON/OFF control signal for FM2
[L]: FM2 ON
[H]: FM2 OFF

(2) FM11 CONT (CB→DCDB)
 Rotational speed control signal for FM11
 [L]: Low speed rotation
 [H]: High speed rotation

(3) FM22 CONT (CB→DCDB)
 FM22 rotational speed control signal
 [L]: Low speed rotation
 [H]: High speed rotation

(4) FM16 CONT (CB→DCDB)
 Rotational speed control signal for FM16
 [L]: Low speed rotation
 [H]: High speed rotation

(5) FM11 H/L (DCDB→FM11)
 Rotation drive signal for FM11
 [L]: High speed drive
 [H]: Low speed drive

(6) FM16 H/L (DCDB→FM16)
 Rotation drive signal for FM11
 [L]: High speed drive
 [H]: Low speed drive

(7) FM22 H/L (DCDB→FM22)
 Rotation drive signal for FM22
 [L]: High speed drive
 [H]: Low speed drive

(8) FM2 DRIVE (DCDB→FM2)
 Drive control signal for FM2
 [L]: FM2 OFF
 [H]: FM2 ON

b. Input signal

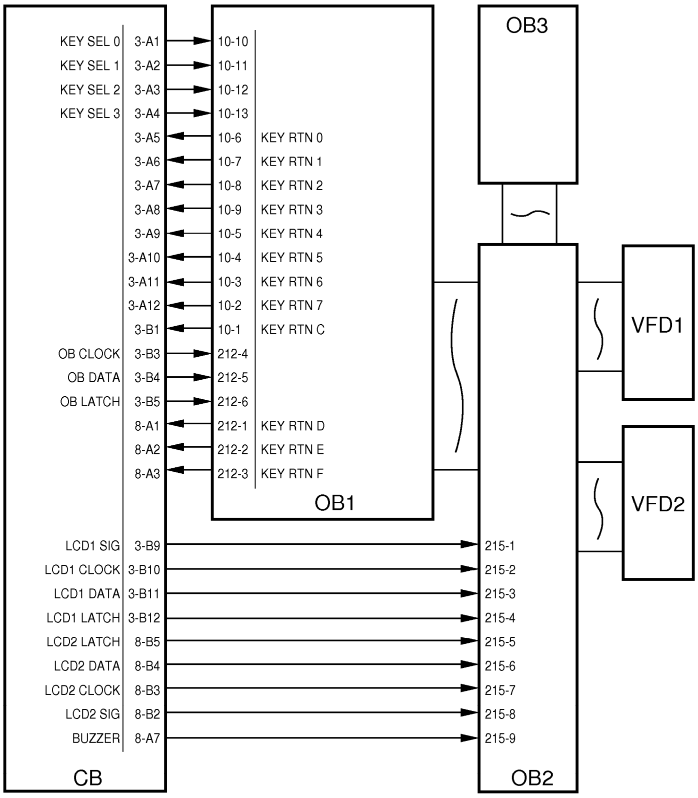
(1) FM11 LD (FM11→DCDB→CB)
 This signal becomes [L] when FM11 reaches the set speed.

(2) FM16 LD (FM16→DCDB→CB)
 This signal becomes [L] when FM16 reaches the set speed.

(3) FM22 LD (FM22→DCDB→CB)
 This signal becomes [L] when FM22 reaches the set speed.

(4) FM2 LD (FM2→DCDB→CB)
 This signal becomes [L] when FM2 reaches the set speed.

[4] Operation Panel Control


CB
KEY SEL 0 3-A1
KEY SEL 1 3-A2
KEY SEL 2 3-A3
KEY SEL 3 3-A4
3-A5
3-A6
3-A7
3-A8
3-A9
3-A10
3-A11
3-A12
3-B1
OB CLOCK 3-B3
OB DATA 3-B4
OB LATCH 3-B5
8-A1
8-A2
8-A3
LCD1 SIG 3-B9
LCD1 CLOCK 3-B10
LCD1 DATA 3-B11
LCD1 LATCH 3-B12
LCD2 LATCH 8-B5
LCD2 DATA 8-B4
LCD2 CLOCK 8-B3
LCD2 SIG 8-B2
BUZZER 8-A7
OB1
10-10
10-11
10-12
10-13
10-6 KEY RTN 0
10-7 KEY RTN 1
10-8 KEY RTN 2
10-9 KEY RTN 3
10-5 KEY RTN 4
10-4 KEY RTN 5
10-3 KEY RTN 6
10-2 KEY RTN 7
10-1 KEY RTN C
212-4
212-5
212-6
212-1 KEY RTN D
212-2 KEY RTN E
212-3 KEY RTN F
OB3
OB2
215-1
215-2
215-3
215-4
215-5
215-6
215-7
215-8
215-9
VFD1
VFD2

The operation panel consists of three operation boards which comprise the following three circuits.

- LED drive circuit
- LCD display circuit
- Input circuit for the various buttons

1. Operation

a. LED drive operation

The various LEDs are turned ON and OFF by ? ICs (shift register/latch driver).

Each IC turns ON/OFF the LED connected each output terminal, according to serial data from the CB (control board).

b. LCD display operation

The LCD (VFD1, VFD2) on OB2 (operation board 2) displays various messages according to the LCD control signal (serial data) output from the CB.

c. Various kind input operations

A matrix circuit is used for processing key inputs from the operation panel. In this circuit, there are 12 key return terminals for four timing pulses output from the CB, and a total of 48 key inputs are output to the CB.

	KEY SEL 0	KEY SEL 1	KEY SEL 2	KEY SEL 3
KEY RTN 0	SW001 “1”	SW015 “1”	SW016 “3”	SW017 “4”
KEY RTN 1	SW009 “5”	SW010 “6”	SW011 “7”	SW008 “8”
KEY RTN 2	SW005 “9”	SW006 “0”	SW007 “P”	SW012 “Stop/Clear”
KEY RTN 3	SW013,014 “Copy”	SW002 “Interrupt”	SW003 “Auto Reset”	SW004 “Super Size”
KEY RTN 4	SW004 “Enlarge”	SW007 “Magnification”	SW002 “Copy Density ”	SW003 “Copy Density ∇”
KEY RTN 5	SW005 “Reduce”	SW015 “Spare”	SW007 “Reduction Shift/Shift”	SW021 “Output”
KEY RTN 6	SW013 “2 IN 1/4 IN 1”	SW013 “Text/Photo”	SW015 “Book Copy”	SW006 “erasure outside original area”
KEY RTN 7	SW001 “Copy Mode”	SW018 “Preheat”	SW004 “Thick Paper/Thin Paper”	SW003 “Memory”
KEY RTN C	SW009 “F2”	SW008 “Set F1”	SW010 “F3”	SW011 “F4”
KEY RTN D	SW014 “Image Read”	SW006 “Independent Magnification Change”	SW013 “Single Step”	SW012 “Insertion Page/Chapter Demarcation”
KEY RTN E	SW012 “Memory”	SW009 “Repeat”	SW010 “Reversed black and white mode”	SW005 “Fold erasure/frame erasure”
KEY RTN F	SW014 “Timer Setting”	SW011 “Intersheet”	SW008 “OHP intersheet”	SW001 “Timer Cancel”

☐ : OB1, ▒ : OB2, ▓ : OB3,

d. Initial operation of the operation panel

When the machine is in one of the following states, the various set conditions are in the initial conditions.

(1) When the power is switched ON (SW1 OFF→ON)
(2) When the auto reset operates
(3) When the auto shutoff is canceled
(4) When the Auto button is pressed
(5) When the key counter of a machine that uses a key counter is inserted
(6) When originals are placed in the ADF in the non-ADF mode
(7) When the by-pass feed tray is returned in the by-pass feed mode

e. Indication and state after the initial operation

Function	Initial state
Copy button	Lit green (ready state)
Copy quantity	01
ADF	Flashing (auto priority mode) *
EE	Lit (auto priority mode) *
APS	Lit (auto priority mode) *
1:1	Lit
Magnification	Fixed
Paper size	The LEDs corresponding to all of the set paper sizes are lit.

Caution: Items marked * can be selected in the 25 mode.

2. Signals

a. Input signals

(1) KEY RTN 0 to F (OB1→CB)
Signal returned from the button signal input section

b. Output signals

(1) KEY SEL 0 to 3 (CB→OB1)
Timing pulses to the button signal input section

(2) OB DATA (CB→OB1)
LED display data

(3) OB CLOCK (CB→OB1)
Clock signal used to read OB DATA. Data is read in synchronism with this signal.

(4) OB LATCH (CB→OB1)
Data latch signal. When this signal becomes [L], the read data is displayed on the LED.

(5) LCD1 SIG (CB→OB2)
VFD1 ON/OFF control signal.
When this signal is [L], VFD1 is ON.

(6) LCD1 DATA (CB→OB2)
VFD1 display data

(7) LCD1 CLOCK (CB→OB2)
Clock signal for reading LCD1 DATA. Data is read in synchronism with this signal.

(8) LCD1 LATCH (CB→OB2)
Data latch signal. When this signal is [L], the read data is displayed on VFD1.

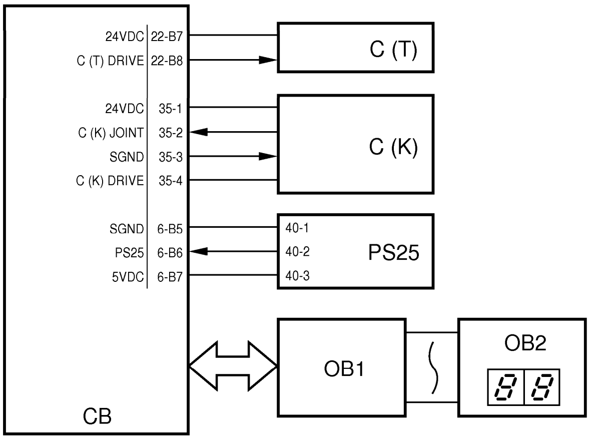
(9) LCD2 SIG (CB→OB2)
VFD2 ON/OFF control signal.
When this signal is [L], VVFD1 is ON.

(10) LCD2 DATA (CB→OB2)
VFD2 display data

(11) LCD2 CLOCK (CB→OB2)
Clock signal for reading LCD2 DATA.
Data is read in synchronism with this signal.

(12) LCD2 LATCH (CB→OB2)
Data latch signal. When this signal becomes [L], the read data is displayed on VFD2.

[5] Counter Control



This machine contains the following counters.
C(T) (total counter)
C(K) (key counter)
These counters are controlled by the CB (control board). PS25 (paper exit detection) is a signal related to this control.

1. Operation

This machine counts copies by means of two software counters.

(1) Paper feed counter
The count increases by 1 each time the 1st paper feed goes ON.

(2) Paper exit counter
The count increases by 1 each time PS25 goes ON OFF.
<Operation of each counter>

a . Copy quantity display counter on OB

Normal	Paper jam
Indicates the count on the paper feed counter.	ndicates the count on I the paper exit counter.

b. C(K)

This counter counts in synchronism with the paper exit counter.

c. C(T)

This counter counts in synchronism with the paper exit counter.

2. Signals

a. Input signals

(1) C(K) JOINT (C(K)→CB)
This signal informs the CB that the count on C(K) has increased.

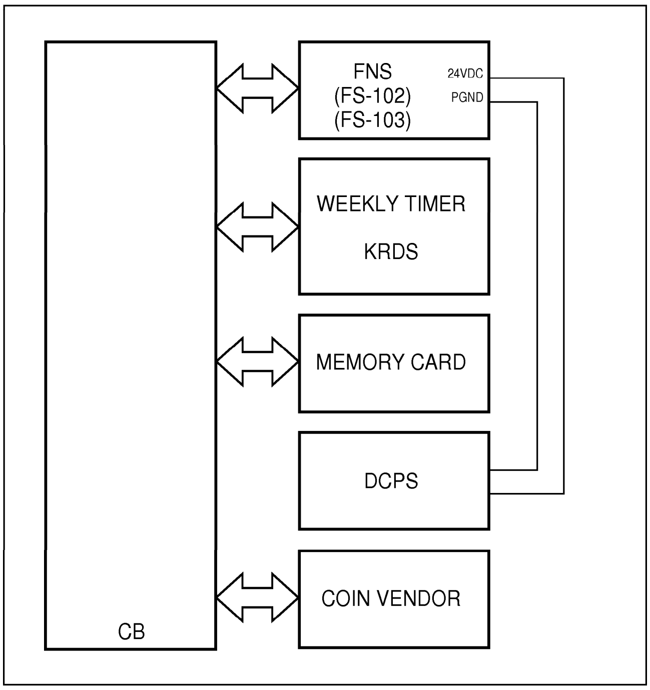
(2) PS25 (PS25→CB)
PS25 state signal.
When this signal is [L], PS25 goes ON, indicating that the paper has been exited.

b. Output signals

(1) C(T) DRIVE (CB→C(T))
C(T) drive signal.
When this signal changes from [L] -> [H], the count of C(T) increases by 1.

(2) C(K) DRIVE (CB→C(K))
C(K) drive signal
When this signal changes from [L] -> [H], the count of C(K) increases by 1.

[6] Option Control



In this machine, the weekly timer, KRDS and memory card options are controlled by the CB (control board).

1. Operation

The weekly timer, KRDS, memory card and FNS contain a CPU which controls the flow of data with the main body CB. (Refer to the “Option” manual for details of each option.) Power is supplied to the FNS by DCPS2 (DC power supply unit). The weekly timer and KRDS have own power supplies and power is supplied to memory card via the CB.

<Operation/output timing of coin vender signal>

Pin No.	Signal name	Description	Output timing	Kind of signal
1	Vender Copy	"Copy in progress" signal	Output from when the Copy button is pressed until the copy is exited.	Open collector 35 V, 200 mA
2	Vender Copy	Paper feed signal	100 ms L signal that is synchronized with the main body tray/LCD	Open collector 35 V, 200 mA
3	Paper size 0 to 3	Paper size signal	Output only while a copy is being made.	Open collector 35 V, 200 mA
4				
5				
6				
7	Vender two-sided copy	Two-sided copy select signal	Signal output only while a copy is being made.	Open collector 35 V, 200 mA
8	N.C.	Spare terminal	—	—
9	N.C.	Spare terminal	—	—
10	P.GND	Power ground	—	—

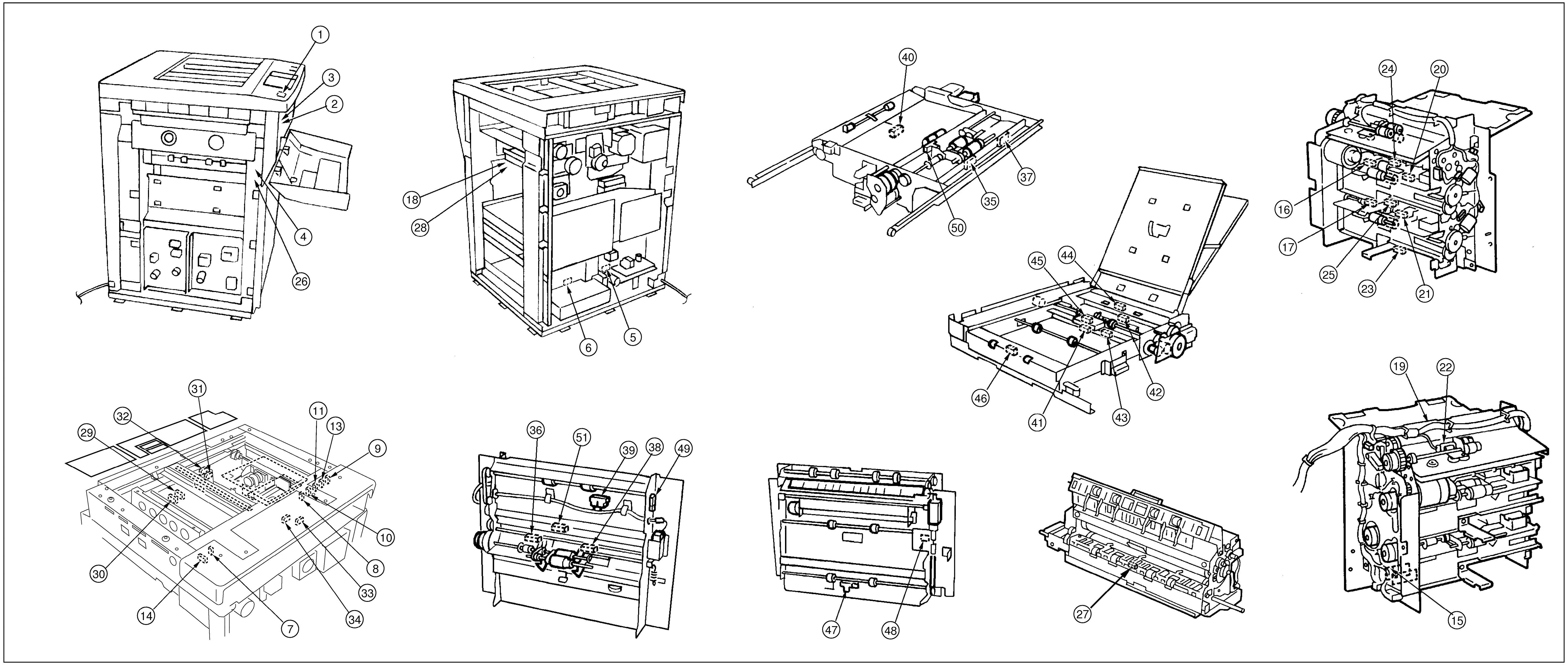
4

DIAGRAMS

2. DIAGRAMS

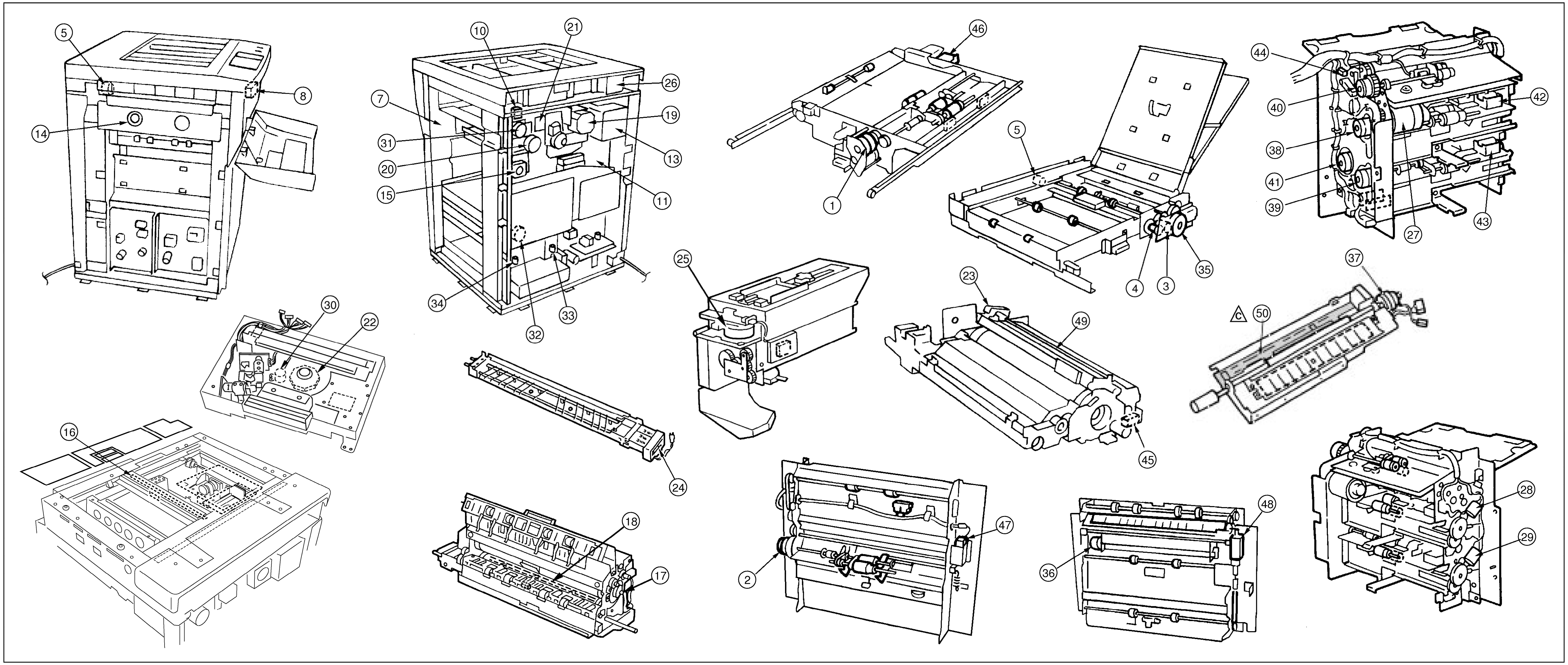
7050 ELECTRICAL PARTS LAYOUT DRAWING 4-1
7050 CONNECTOR LAYOUT DRAWING 4-4
7050 OVERALL WIRING DIAGRAM 4-8
7050 TIMING CHART 4-36
7050 ADU TIMING CHART 4-37
JAM LIST 4-38
  [1] Paper Jam 4-54
  [2] Warning 4-54
  [3] Trouble 4-55
LIST OF COME-OUT CONNECTOR (Reference Only) 4-54
  [1] Paper Jamming 4-54
  [2] Warning 4-54
  [3] Trouble 4-55
  [4] Others 4-56

7050 ELECTRICAL PARTS LAYOUT DRAWING



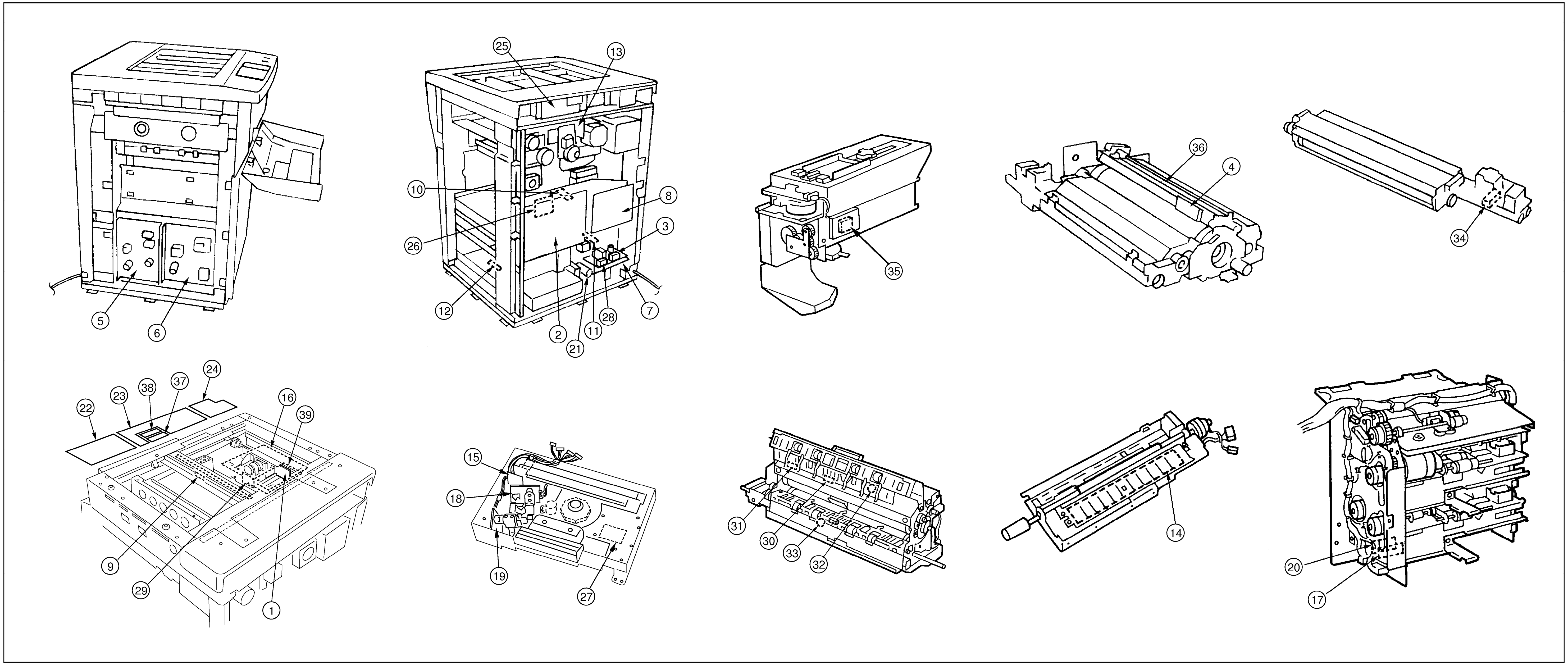
1. Switch Sensor

①	SW1	Main switch
②	MS1	Door interlock MS1
△C ③	MS2	Door interlock MS2(for LD)
④	MS3	Fixing unit set interlock MS3
△C ⑤	MS141	LCT detection (1000)
△C ⑥	MS142	LCT detection (1500)
⑦	PS1	Optics overrun PS
⑧	PS2	ADF EE PS
⑨	PS3	Shading position PS
⑩	PS4	Paper feed restart PS
⑪	PS5	Optics return PS
⑫	—	—
⑬	PS7	Optics timing PS
⑭	PS8	Glass PS
⑮	PS11	Paper conveyance door PS
⑯	PS12	Upper tray no paper PS
⑰	PS13	Lower tray no paper PS
⑱	PS14	Regist. PS
⑲	PS15	By-pass no paper PS
⑳	PS16	Upper limit PS (upper)
㉑	PS17	Upper limit PS (lower)
㉒	PS18	No feed PS
㉓	PS19	Optics sync PS
㉔	PS20	Pre W try PS (upper)
㉕	PS21	Pre W try PS (lower)
㉖	PS24	Fuser detect PS
㉗	PS25	Paper exit PS
㉘	PS30	By-pass PS
㉙	PS40	APS sensor 1 (short)
㉚	PS41	APS sensor 2 (long)
㉛	PS42	APS sensor 3 (inside)
㉜	PS43	APS sensor 4 (outside)
㉝	PS44	Book detector PS
㉞	PS45	APS timing PS 1
㉟	PS140	LCT no paper PS (1500)
㊱	PS141	LCT no paper PS (1000)
㊲	PS142	LCT upper limit PS (1500)
㊳	PS143	LCT upper limit PS (1000)
㊴	PS144	LCT conveyance PS (1000)
㊵	PS146	LCT conveyance PS (1500)
㊶	PS151	ADU no paper PS
㊷	PS152	ADU paper feed PS
㊸	PS153	ADU reversal detiction PS
㊹	PS154	ADU paper exit PS 1
㊺	PS155	ADU paper exit PS 2
㊻	PS156	ADU paper exit PS 3
△C ㊼	PS157	ADU gate PS
㊽	PS158	ADU interlock PS
㊾	PS160	LCT interlock PS
㊿	PS200	LCT pre W PS (1500)
(51)	PS210	LCT pre W PS (1000)



2. Load

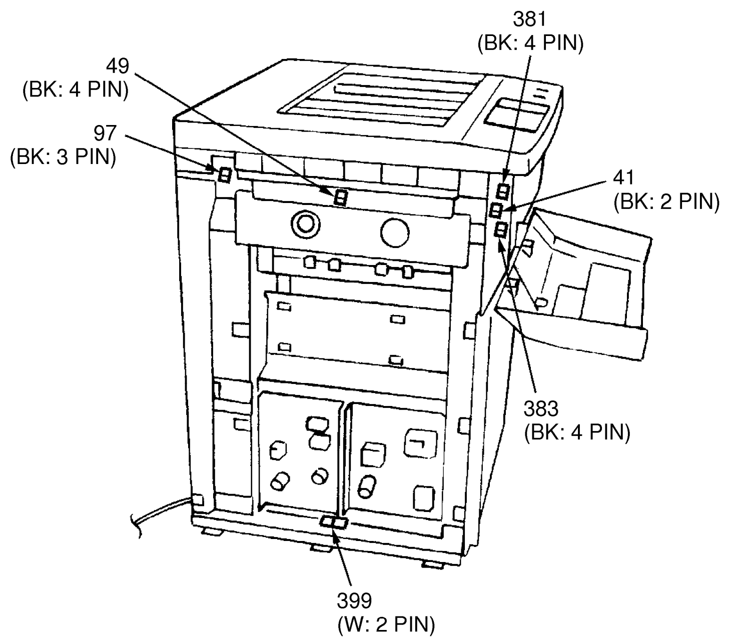
①	CL1	LCT paper feed CL (1500)
②	CL2	LCT paper feed CL (1000)
③	CL151	ADU paper feed CL
④	CL152	ADU reversal CL
⑤	CL153	ADU timing CL
⑥	—	—
⑦	C(K)	Key counter
⑧	C(T)	Total counter
⑨	FM2	Optics cooling fan
⑩	FM11	Polygon cooling fan
⑪	FM14	Conveyance suction fan
⑫	—	—
⑬	FM16	Main body cooling fan
⑭	FM22	E-RDH cooling fan
⑮	FM30	Developing suction fan
⑯	L1	Exposure lamp
⑰	L2	Fixing heater lamp (upper)
⑱	L4	Fixing heraer lamp (lower)
⑲	M1	Main motor
⑳	M3	Developing drive motor
㉑	M4	Drum motor
㉒	M5	Polygon motor
㉓	M7	Charger cleaning motor
㉔	M8	Transfer/separate cleaning motor
㉕	M10	Toner supply motor
㉖	M12	Optics drive motor
㉗	M13	Paper feed motor
㉘	M17	Upper tray motor
㉙	M18	Lower tray motor
㉚	M40	Laser revise motor
㉛	M35	Developing screw motor
㉜	M140	LCT paper feed motor
㉝	M141	LCT tray motor (1500)
㉞	M142	LCT tray motor (1500)
㉟	M151	ADU paper feed motor
㊱	M152	ADU fan motor
㊲	MC3	2nd paper feed MC
㊳	MC5	Paper feed MC (upper)
㊴	MC6	Paper feed MC (lower)
㊵	MC7	Paper feed MC (by-pass)
㊶	MC8	Conveyance MC
㊷	SD1	1st paper feed SD (upper)
㊸	SD2	1st paper feed SD (lower)
㊹	SD3	1st paper feed SD (by-pass)
㊺	SD4	Separation claw SD
㊻	SD140	LCT paper feed SD (1500)
㊼	SD141	LCT paper feed SD (1000)
㊽	SD152	ADU gate SD
㊾	PCL	Pre-charging lamp
△C ㊿	TSL	Transfer lamp

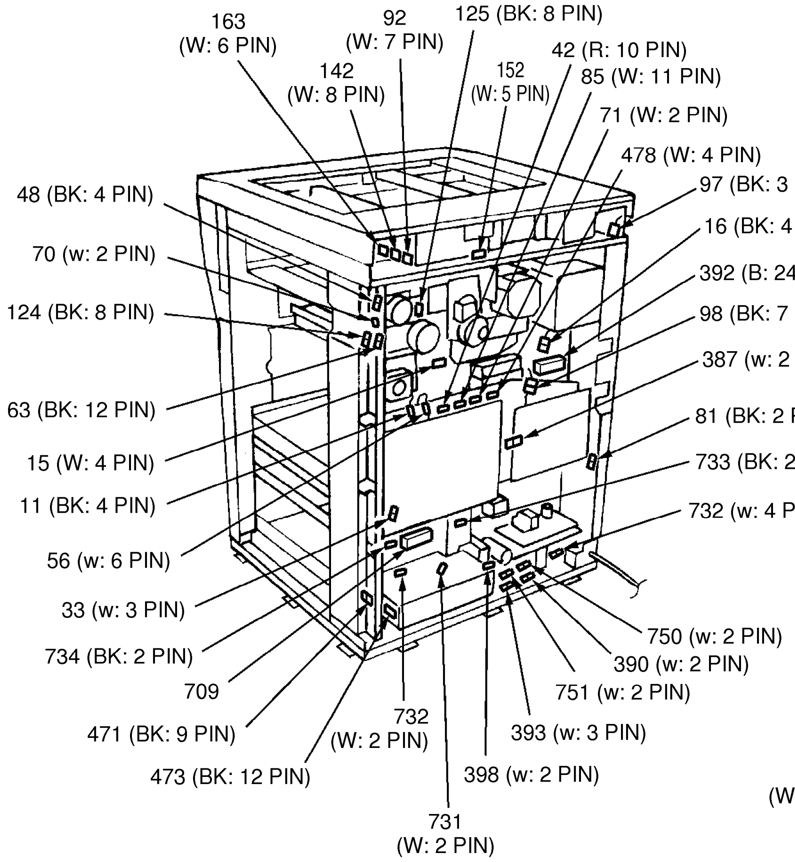


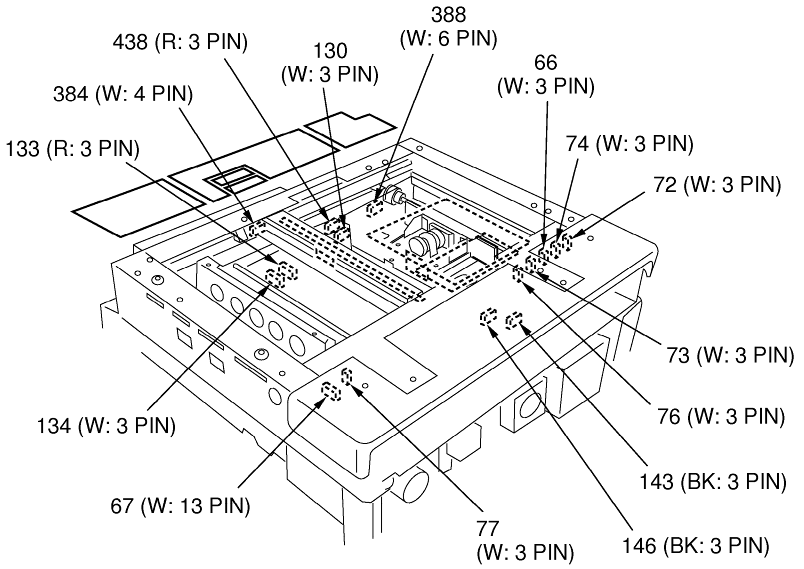
3. Others

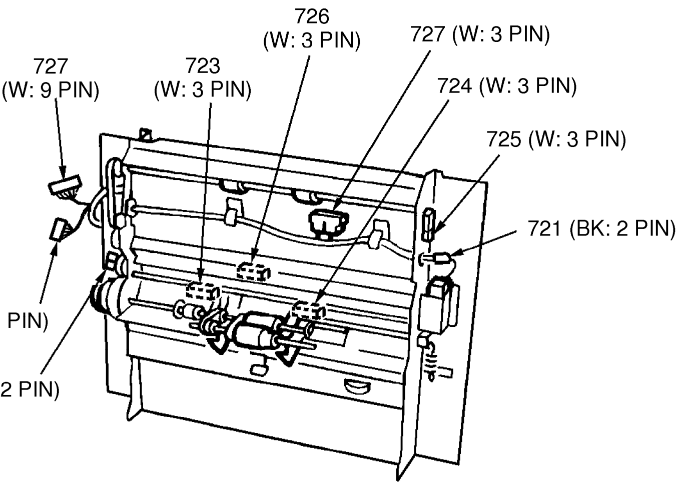
①	ADB	AD conversion board
②	CB	Control board
③	CBR	Circuit breaker
④	DB	Drum board
⑤	DCPS1	DC power supply unit 1
⑥	DCPS2	DC power supply unit 2
⑦	DCPS3	DC power supply unit 3
⑧	DCDB	DC driver board
⑨	f1	Optics temperature fuse
⑩	HTR1	Internal heater 1
⑪	HTR2	Internal heater 2
⑫	HTR3	Internal heater 3
⑬	HV1	High voltage unit 1
⑭	HV2	High voltage unit 2
⑮	INDEXSB	Index sensor board
⑯	IPB	Image processing board
⑰	IPDB	Inclination paper detection board
⑱	LDB1	Laser diode board 1
⑲	LDB2	Laser diode board 2
⑳	LED1	Inclination paper detection LED
㉑	NF	Noise filter
㉒	OB1	Operation board 1
㉓	OB2	Operation board 2
㉔	OB3	Operation board 3
㉕	OPMDB	Optics motor drive board
㉖	-	Paper seze detection board
㉗	PMDB	Polygon drive board
㉘	RL1	Main relay
㉙	RDH IFB	E-RDH I/F board
㉚	TH1	Fixing temperature sensor 1
㉛	TH2	Fixing temperature sensor 2
㉜	TS1	Thermostat 1
㉝	TS2	Thermostat 2
㉞	TDS	Toner density sensor
㉟	TLD	Toner level detection sensor
㊱	TCSB	Toner control sensor board
㊲	VFD1	LCD indicator board 1
㊳	VFD2	LCD indicator board 2
39	E-RDH	Electric RDH control board

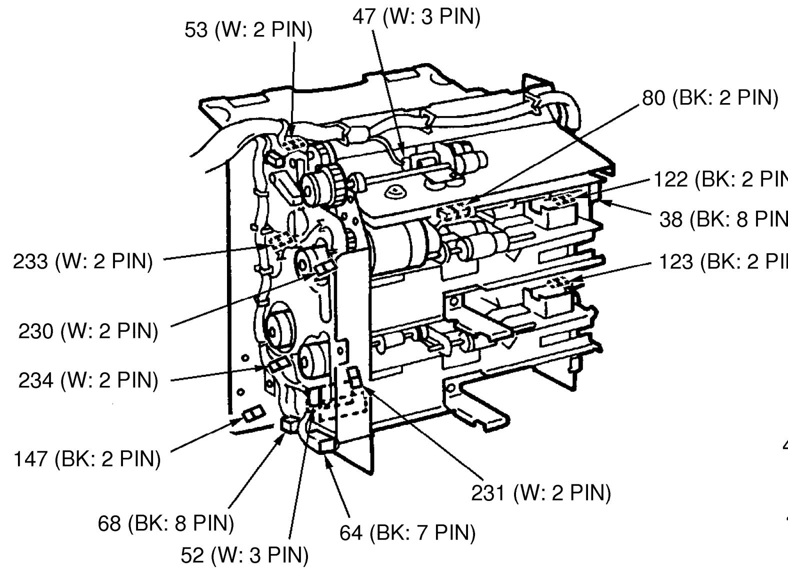
7050 CONNECTOR LAYOUT DRAWING

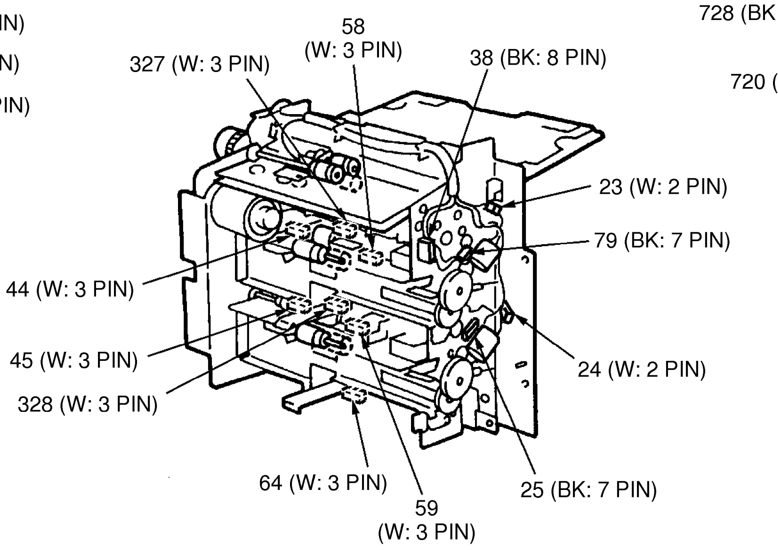

381
(BK: 4 PIN)
49
(BK: 4 PIN)
97
(BK: 3 PIN)
41
(BK: 2 PIN)
383
(BK: 4 PIN)
399
(W: 2 PIN)

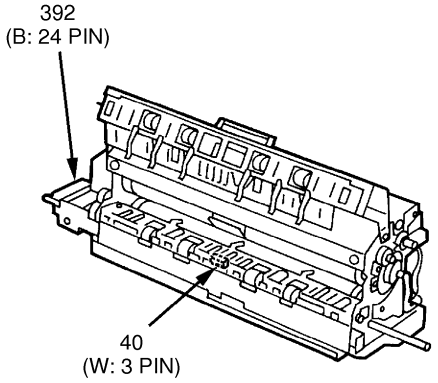

163
(W: 6 PIN)
92
(W: 7 PIN)
125 (BK: 8 PIN)
142
(W: 8 PIN)
152
(W: 5 PIN)
42 (R: 10 PIN)
85 (W: 11 PIN)
71 (W: 2 PIN)
478 (W: 4 PIN)
97 (BK: 3 PIN)
48 (BK: 4 PIN)
16 (BK: 4 PIN)
70 (w: 2 PIN)
392 (B: 24 PIN)
124 (BK: 8 PIN)
98 (BK: 7 PIN)
387 (w: 2 PIN)
63 (BK: 12 PIN)
81 (BK: 2 PIN)
15 (W: 4 PIN)
733 (BK: 2 PIN)
11 (BK: 4 PIN)
732 (w: 4 PIN)
56 (w: 6 PIN)
33 (w: 3 PIN)
750 (w: 2 PIN)
734 (BK: 2 PIN)
390 (w: 2 PIN)
709
751 (w: 2 PIN)
471 (BK: 9 PIN)
732
(W: 2 PIN)
393 (w: 3 PIN)
473 (BK: 12 PIN)
398 (w: 2 PIN)
731
(W: 2 PIN)


388
(W: 6 PIN)
438 (R: 3 PIN)
130
(W: 3 PIN)
66
(W: 3 PIN)
384 (W: 4 PIN)
133 (R: 3 PIN)
74 (W: 3 PIN)
72 (W: 3 PIN)
73 (W: 3 PIN)
134 (W: 3 PIN)
76 (W: 3 PIN)
143 (BK: 3 PIN)
67 (W: 13 PIN)
77
(W: 3 PIN)
146 (BK: 3 PIN)


726
(W: 3 PIN)
727 (W: 3 PIN)
727
(W: 9 PIN)
723
(W: 3 PIN)
724 (W: 3 PIN)
725 (W: 3 PIN)
721 (BK: 2 PIN)
728 (BK: 10 PIN)
720 (W: 2 PIN)

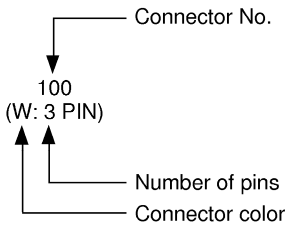

53 (W: 2 PIN)
47 (W: 3 PIN)
80 (BK: 2 PIN)
122 (BK: 2 PIN)
38 (BK: 8 PIN)
233 (W: 2 PIN)
123 (BK: 2 PIN)
230 (W: 2 PIN)
234 (W: 2 PIN)
147 (BK: 2 PIN)
231 (W: 2 PIN)
68 (BK: 8 PIN)
64 (BK: 7 PIN)
52 (W: 3 PIN)


58
(W: 3 PIN)
327 (W: 3 PIN)
38 (BK: 8 PIN)
23 (W: 2 PIN)
79 (BK: 7 PIN)
44 (W: 3 PIN)
24 (W: 2 PIN)
45 (W: 3 PIN)
328 (W: 3 PIN)
64 (W: 3 PIN)
25 (BK: 7 PIN)
59
(W: 3 PIN)


392
(B: 24 PIN)
40
(W: 3 PIN)

[How to read connector numbers]

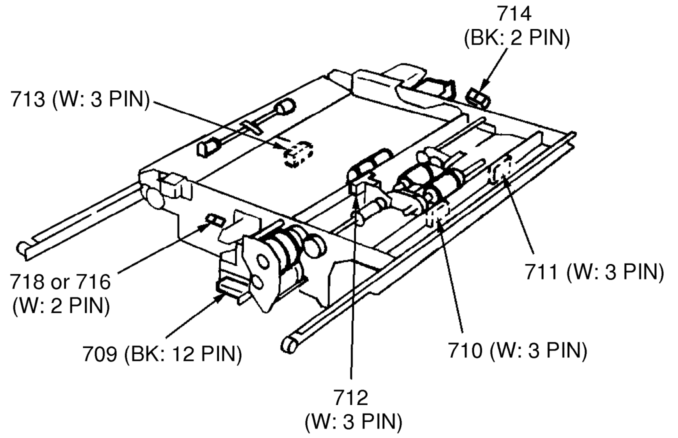
1. Inscribed contents

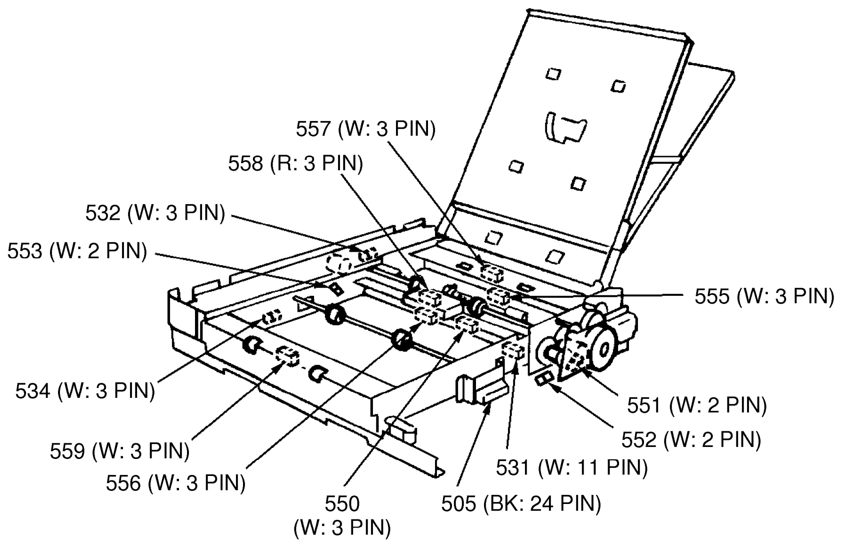

Connector No.
100
(W: 3 PIN)
Number of pins
Connector color

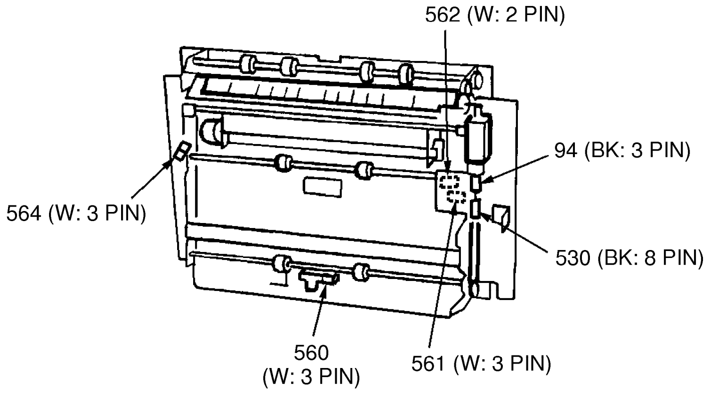
2. Color code

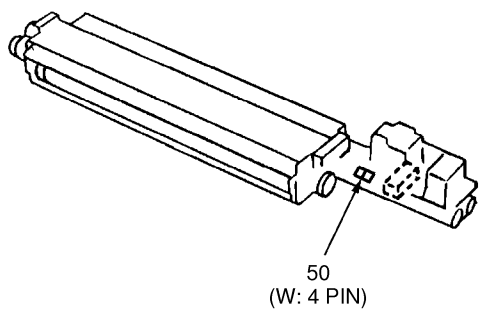
BN: Brown	LB: Light blue	W: White
R: Red	S: Silver	BK: Black
O: Orange	B: Blue	P: Pink
Y: Yellow	V: Violet	
GN: Green	GY: Gray	

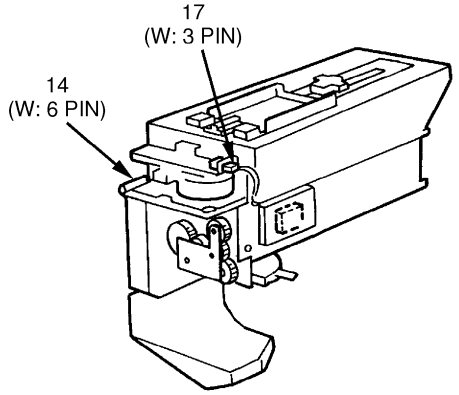
As an example, (B/W) indicates that the male side of the connector is blue and the female side white.

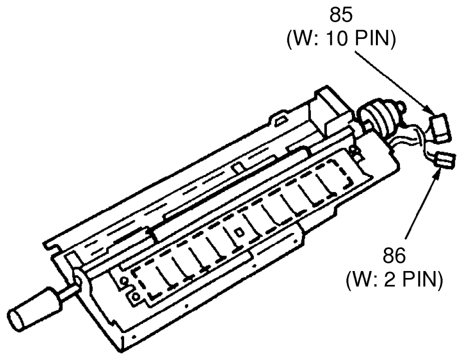

714
(BK: 2 PIN)
713 (W: 3 PIN)
718 or 716
(W: 2 PIN)
709 (BK: 12 PIN)
712
(W: 3 PIN)
710 (W: 3 PIN)
711 (W: 3 PIN)

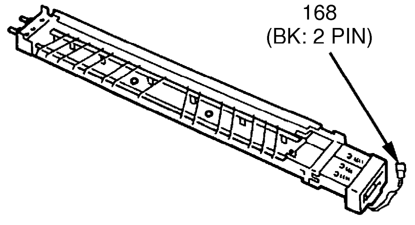

557 (W: 3 PIN)
558 (R: 3 PIN)
532 (W: 3 PIN)
553 (W: 2 PIN)
555 (W: 3 PIN)
534 (W: 3 PIN)
551 (W: 2 PIN)
552 (W: 2 PIN)
559 (W: 3 PIN)
556 (W: 3 PIN)
531 (W: 11 PIN)
550
(W: 3 PIN)
505 (BK: 24 PIN)


562 (W: 2 PIN)
94 (BK: 3 PIN)
564 (W: 3 PIN)
530 (BK: 8 PIN)
560
(W: 3 PIN)
561 (W: 3 PIN)

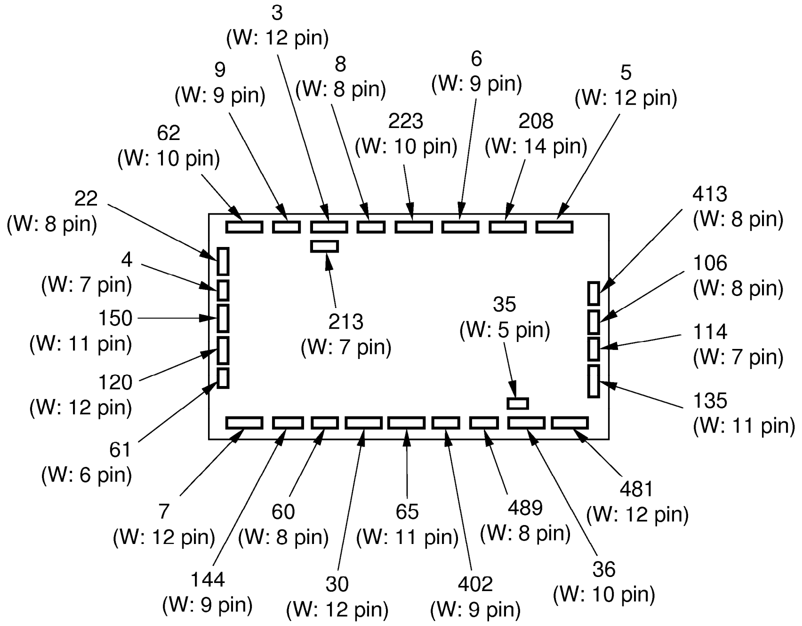



17
(W: 3 PIN)
14
(W: 6 PIN)

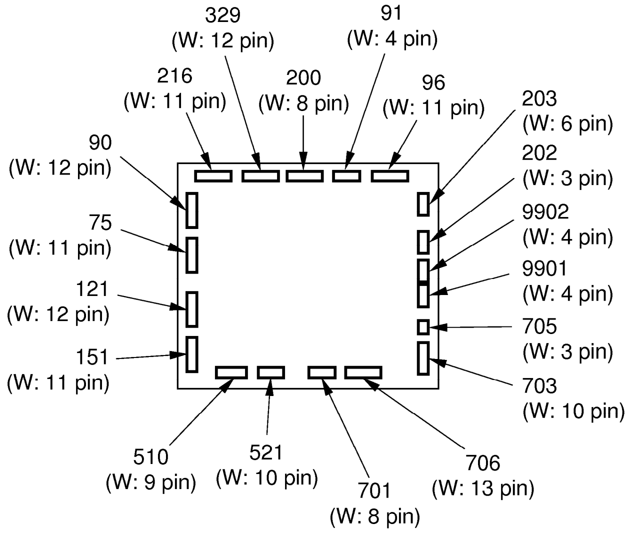

85
(W: 10 PIN)
86
(W: 2 PIN)



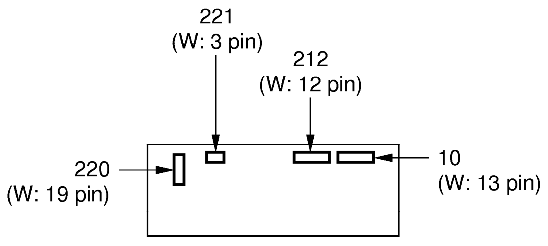
Control Board


3
(W: 12 pin)
9
(W: 9 pin)
8
(W: 8 pin)
6
(W: 9 pin)
5
(W: 12 pin)
62
(W: 10 pin)
223
(W: 10 pin)
208
(W: 14 pin)
22
(W: 8 pin)
413
(W: 8 pin)
4
(W: 7 pin)
106
(W: 8 pin)
150
(W: 11 pin)
213
(W: 7 pin)
35
(W: 5 pin)
114
(W: 7 pin)
120
(W: 12 pin)
135
(W: 11 pin)
61
(W: 6 pin)
7
(W: 12 pin)
60
(W: 8 pin)
65
(W: 11 pin)
489
(W: 8 pin)
481
(W: 12 pin)
144
(W: 9 pin)
30
(W: 12 pin)
402
(W: 9 pin)
36
(W: 10 pin)

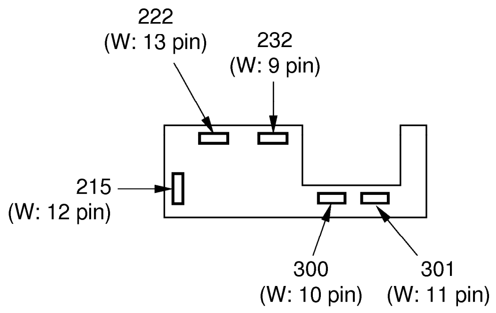
DC Driver Board


329
(W: 12 pin)
91
(W: 4 pin)
216
(W: 11 pin)
200
(W: 8 pin)
96
(W: 11 pin)
203
(W: 6 pin)
90
(W: 12 pin)
202
(W: 3 pin)
9902
(W: 4 pin)
75
(W: 11 pin)
9901
(W: 4 pin)
121
(W: 12 pin)
705
(W: 3 pin)
151
(W: 11 pin)
703
(W: 10 pin)
510
(W: 9 pin)
521
(W: 10 pin)
701
(W: 8 pin)
706
(W: 13 pin)

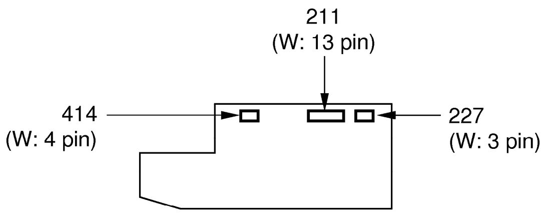
Operation Board/1


221
(W: 3 pin)
212
(W: 12 pin)
220
(W: 19 pin)
10
(W: 13 pin)

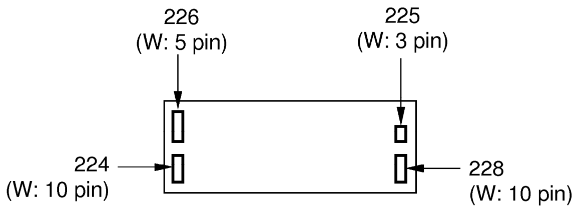
Operation Board/2


222
(W: 13 pin)
232
(W: 9 pin)
215
(W: 12 pin)
300
(W: 10 pin)
301
(W: 11 pin)

Operation Board/3


211
(W: 13 pin)
414
(W: 4 pin)
227
(W: 3 pin)

Optics Motor Drive Board


226
(W: 5 pin)
225
(W: 3 pin)
224
(W: 10 pin)
228
(W: 10 pin)

Toner Control Sensor Board

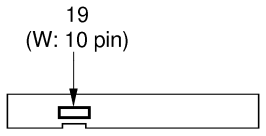
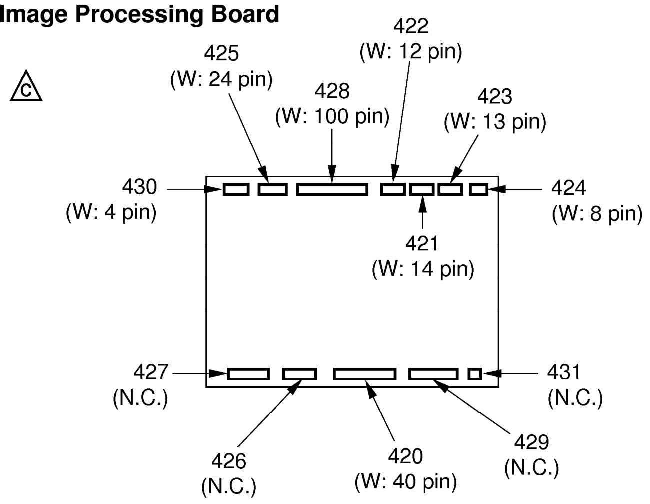
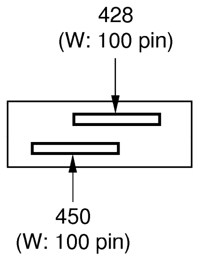


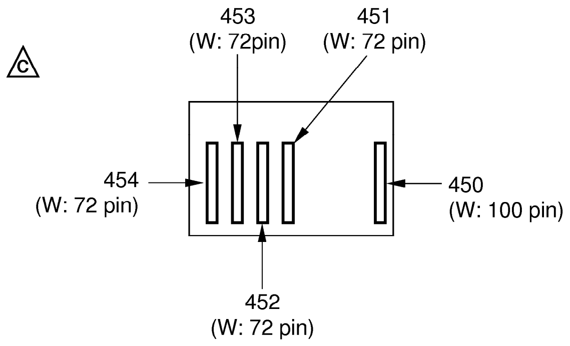
Image Processing Board


422
(W: 12 pin)
425
(W: 24 pin)
428
(W: 100 pin)
423
(W: 13 pin)
430
(W: 4 pin)
424
(W: 8 pin)
421
(W: 14 pin)
427
(N.C.)
431
(N.C.)
426
(N.C.)
420
(W: 40 pin)
429
(N.C.)

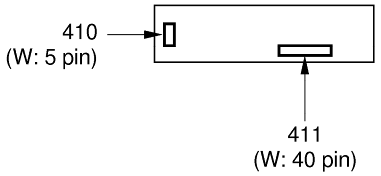
E-RDH I/F Board


428
(W: 100 pin)
450
(W: 100 pin)

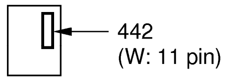
Electric RDH Control Board


453
(W: 72pin)
451
(W: 72 pin)
454
(W: 72 pin)
450
(W: 100 pin)
452
(W: 72 pin)

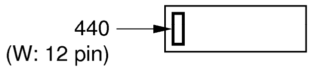
AD Conversion Board


410
(W: 5 pin)
411
(W: 40 pin)

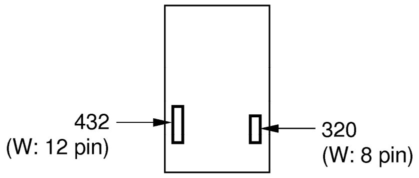
Index Sensor Board



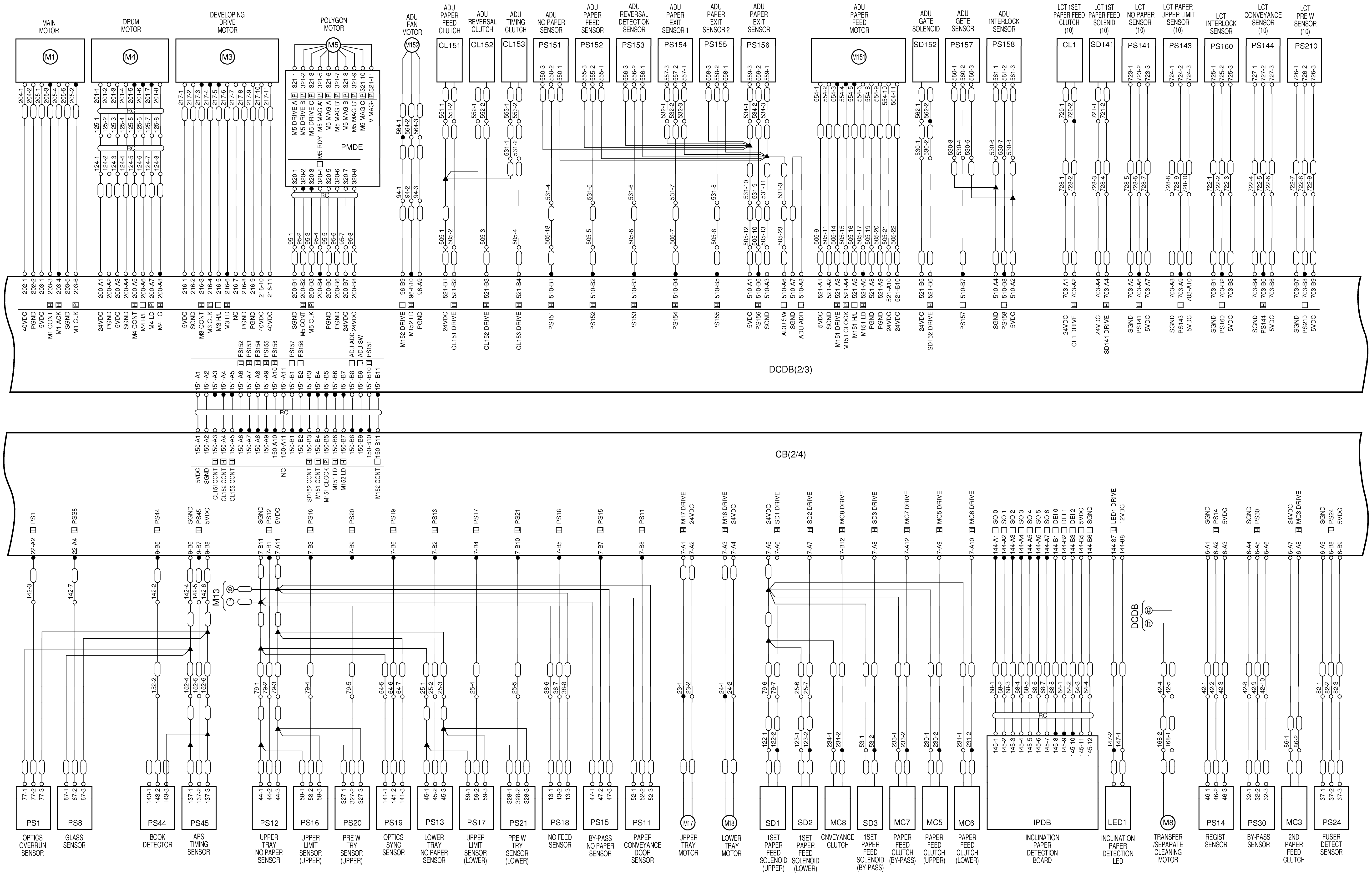
LD Drive Board



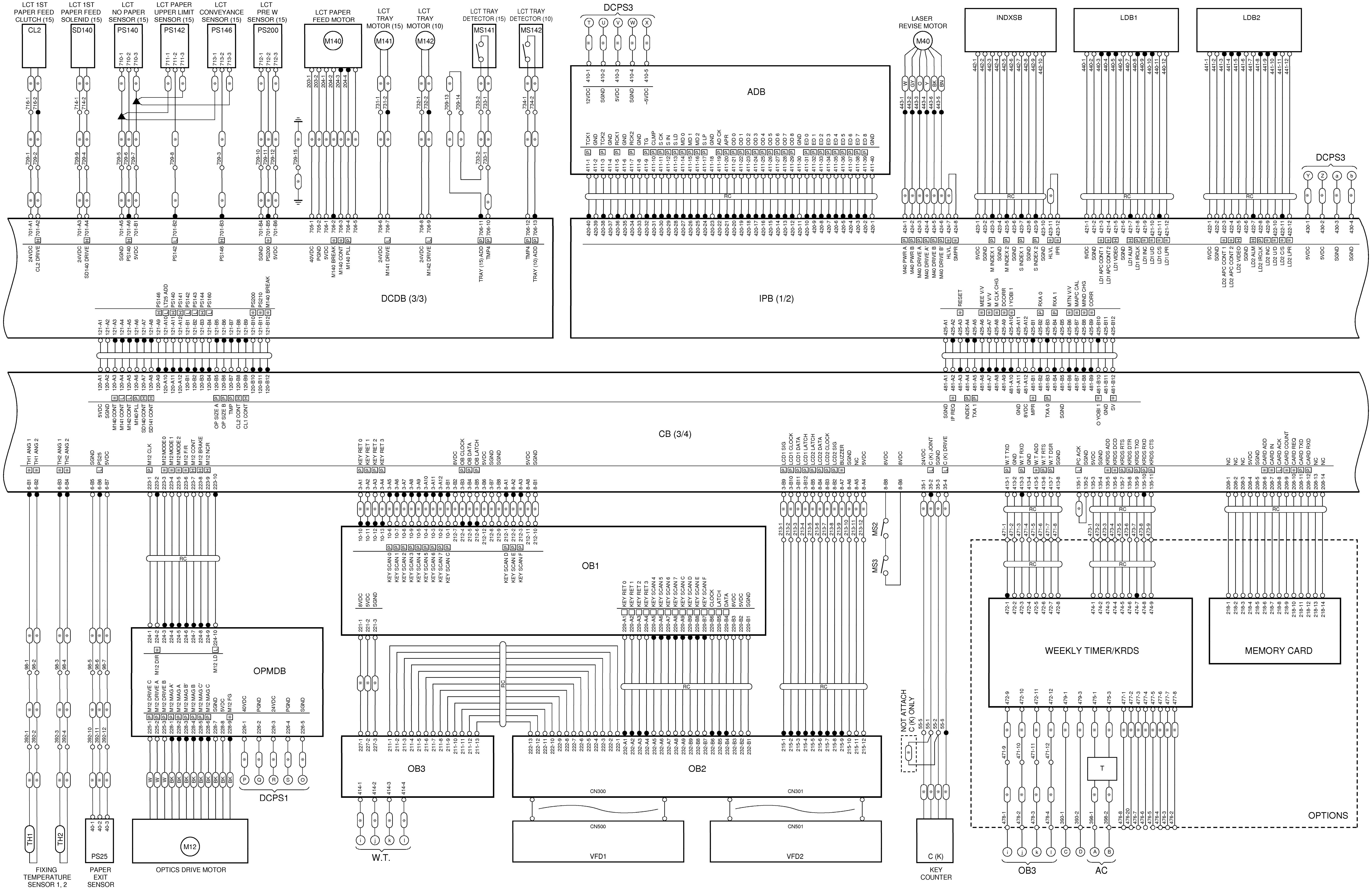
Polygon Drive Board


432
(W: 12 pin)
320
(W: 8 pin)

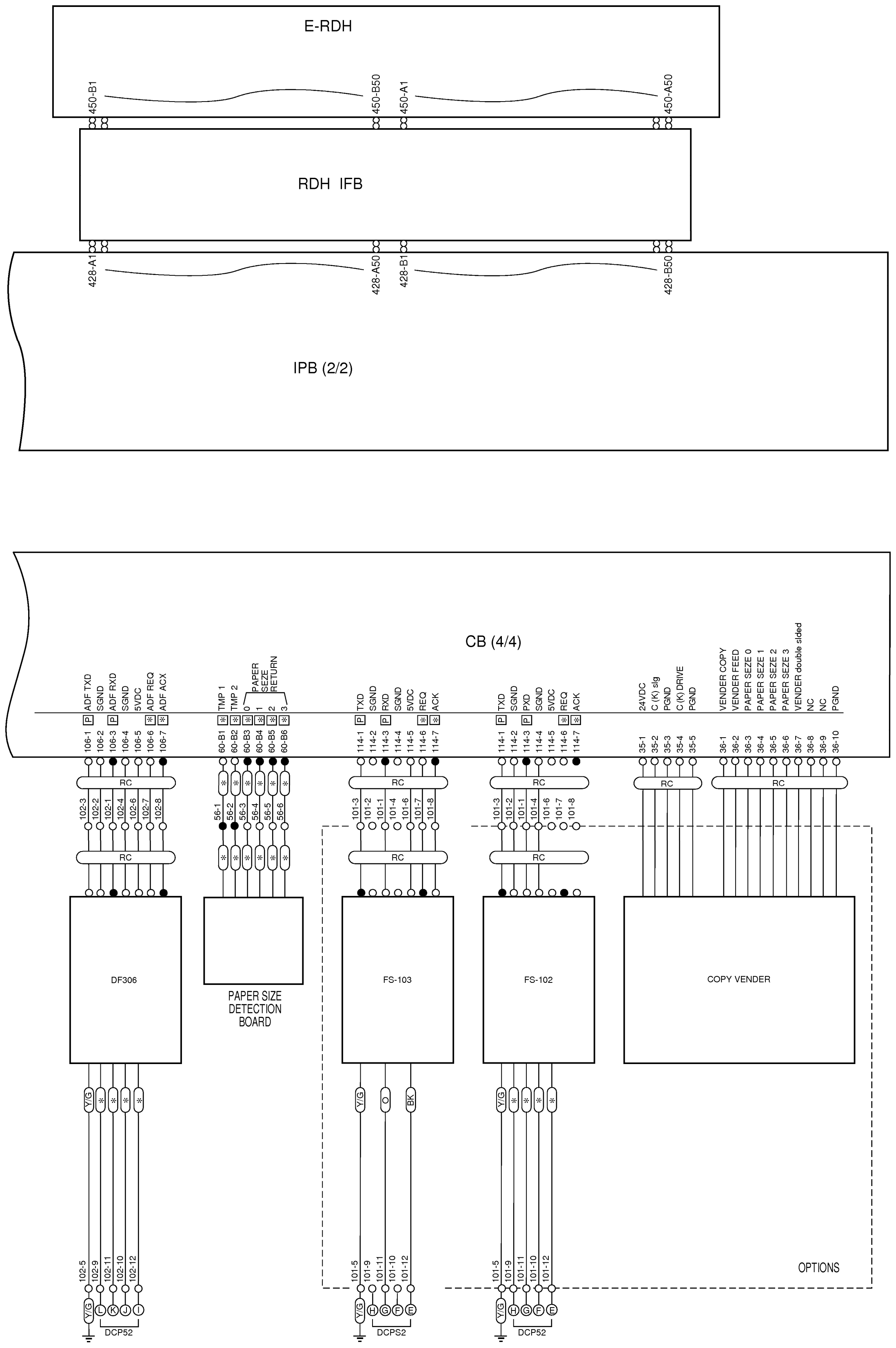
7050 OVERALL WIRING DIAGRAM (2/4)


MAIN MOTOR
M1
DRUM MOTOR
M4
DEVELOPING DRIVE MOTOR
M3
POLYGON MOTOR
M5
PMDE
ADU FAN MOTOR
M152
ADU PAPER FEED CLUTCH
CL151
ADU REVERSAL CLUTCH
CL152
ADU TIMING CLUTCH
CL153
ADU NO PAPER SENSOR
PS151
ADU PAPER FEED SENSOR
PS152
ADU REVERSAL DETECTION SENSOR
PS153
ADU PAPER EXIT SENSOR 1
PS154
ADU PAPER EXIT SENSOR 2
PS155
ADU PAPER EXIT SENSOR
PS156
ADU PAPER FEED MOTOR
M151
ADU GATE SOLENOID
SD152
ADU GETE SENSOR
PS157
ADU INTERLOCK SENSOR
PS158
LCT 1SET PAPER FEED CLUTCH (10)
CL1
LCT 1ST PAPER FEED SOLENOID (10)
SD141
LCT NO PAPER SENSOR (10)
PS141
LCT PAPER UPPER LIMIT SENSOR (10)
PS143
LCT INTERLOCK SENSOR
PS160
LCT CONVEYANCE SENSOR (10)
PS144
LCT PRE W SENSOR (10)
PS210
RC
DCDB(2/3)
CB(2/4)
M13
DCDB
OPTICS OVERRUN SENSOR
PS1
GLASS SENSOR
PS8
BOOK DETECTOR
PS44
APS TIMING SENSOR
PS45
UPPER TRAY NO PAPER SENSOR
PS12
UPPER LIMIT SENSOR (UPPER)
PS16
PRE W TRY SENSOR (UPPER)
PS20
OPTICS SYNC SENSOR
PS19
LOWER TRAY NO PAPER SENSOR
PS13
UPPER LIMIT SENSOR (LOWER)
PS17
PRE W TRY SENSOR (LOWER)
PS21
NO FEED SENSOR
PS18
BY-PASS NO PAPER SENSOR
PS15
PAPER CONVEYANCE DOOR SENSOR
PS11
UPPER TRAY MOTOR
M17
LOWER TRAY MOTOR
M18
1SET PAPER FEED SOLENOID (UPPER)
SD1
1SET PAPER FEED SOLENOID (LOWER)
SD2
CNVEYANCE CLUTCH
MC8
1SET PAPER FEED SOLENOID (BY-PASS)
SD3
PAPER FEED CLUTCH (BY-PASS)
MC7
PAPER FEED CLUTCH (UPPER)
MC5
PAPER FEED CLUTCH (LOWER)
MC6
INCLINATION PAPER DETECTION BOARD
IPDB
INCLINATION PAPER DETECTION LED
LED1
TRANSFER /SEPARATE CLEANING MOTOR
M8
REGIST. SENSOR
PS14
BY-PASS SENSOR
PS30
2ND PAPER FEED CLUTCH
MC3
FUSER DETECT SENSOR
PS24

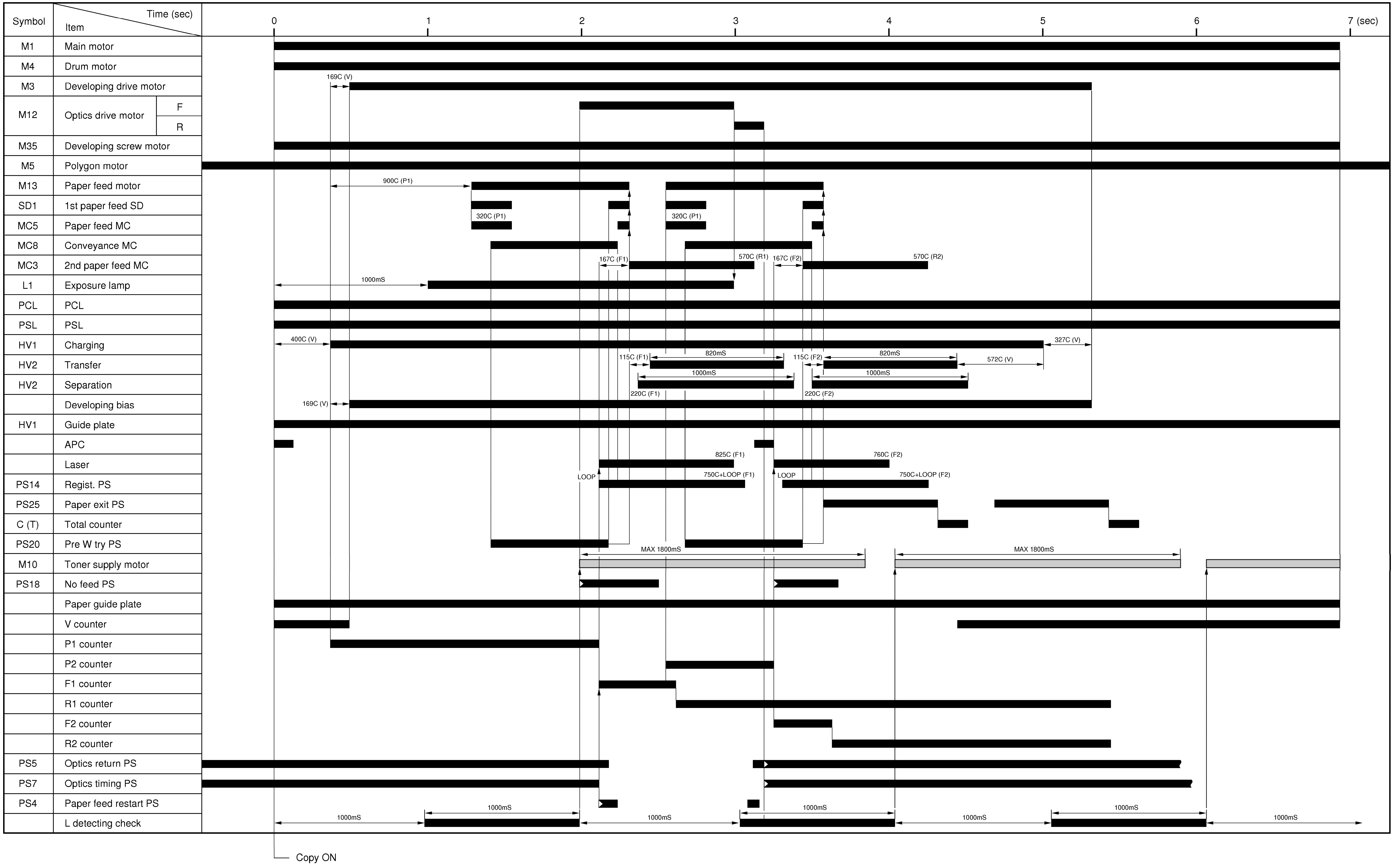
7050 OVERALL WIRING DIAGRAM (3/4)


LCT 1ST PAPER FEED CLUTCH (15)
CL2
LCT 1ST PAPER FEED SOLENID (15)
SD140
LCT NO PAPER SENSOR (15)
PS140
LCT PAPER UPPER LIMIT SENSOR (15)
PS142
LCT CONVEYANCE SENSOR (15)
PS146
LCT PRE W SENSOR (15)
PS200
LCT PAPER FEED MOTOR
M140
LCT TRAY MOTOR (15)
M141
LCT TRAY MOTOR (10)
M142
LCT TRAY DETECTOR (15)
MS141
LCT TRAY DETECTOR (10)
MS142
DCPS3
T
U
V
W
X
ADB
LASER REVISE MOTOR
M40
INDXSB
LDB1
LDB2
DCPS3
Y
Z
a
b
RC
DCDB (3/3)
IPB (1/2)
CB (3/4)
OB1
MS2
MS3
OPMDB
OB3
OB2
CN300
CN301
CN500
CN501
VFD1
VFD2
DCPS1
P
Q
R
S
O
W.T.
i
j
k
l
NOT ATTACH C (K) ONLY
C (K)
KEY COUNTER
WEEKLY TIMER/KRDS
MEMORY CARD
OPTIONS
T
OB3
AC
C
D
A
B
TH1
TH2
FIXING TEMPERATURE SENSOR 1, 2
PS25
PAPER EXIT SENSOR
M12
OPTICS DRIVE MOTOR

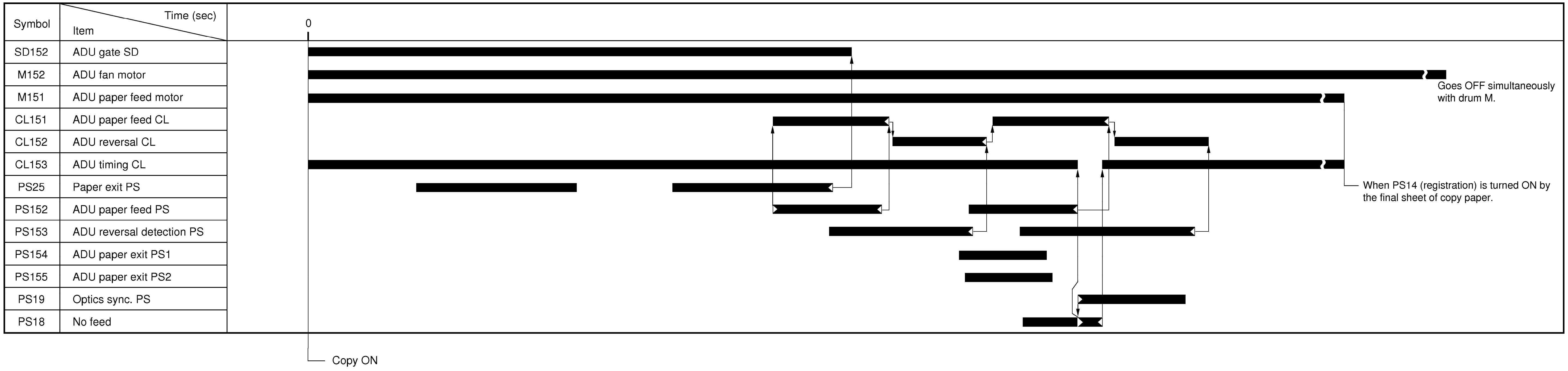
7050 OVERALL WIRING DIAGRAM (4/4)


E-RDH
450-B1
450-B50
450-A1
450-A50
RDH IFB
428-A1
428-A50
428-B1
428-B50
IPB (2/2)
CB (4/4)
ADF TXD
SGND
ADF RXD
SGND
5VDC
ADF REQ
ADF ACX
TMP 1
TMP 2
PAPER SEZE RETURN
0
1
2
3
TXD
SGND
RXD
SGND
5VDC
REQ
ACK
TXD
SGND
PXD
SGND
5VDC
REQ
ACK
24VDC
C (K) slg
PGND
C (K) DRIVE
PGND
VENDER COPY
VENDER FEED
PAPER SEZE 0
PAPER SEZE 1
PAPER SEZE 2
PAPER SEZE 3
VENDER double slded
NC
NC
PGND
P
*
106-1
106-2
106-3
106-4
106-5
106-6
106-7
60-B1
60-B2
60-B3
60-B4
60-B5
60-B6
114-1
114-2
114-3
114-4
114-5
114-6
114-7
35-1
35-2
35-3
35-4
35-5
36-1
36-2
36-3
36-4
36-5
36-6
36-7
36-8
36-9
36-10
RC
102-3
102-2
102-1
102-4
102-6
102-7
102-8
56-1
56-2
56-3
56-4
56-5
56-6
101-3
101-2
101-1
101-4
101-6
101-7
101-8
DF306
PAPER SIZE DETECTION BOARD
FS-103
FS-102
COPY VENDER
Y/G
O
BK
102-5
102-9
102-11
102-10
102-12
101-5
101-9
101-11
101-10
101-12
L
K
J
I
H
G
F
E
DCP52
DCPS2
OPTIONS

7050 TIMING CHART (A4, LIFE SIZE, TWO COPIES, UPPER PAPER FEED)



7050 ADU TIMING CHART (A4, TWO ORIGINALS, TWO SHEETS SET)



Symbol	Item
SD152	ADU gate SD
M152	ADU fan motor
M151	ADU paper feed motor
CL151	ADU paper feed CL
CL152	ADU reversal CL
CL153	ADU timing CL
PS25	Paper exit PS
PS152	ADU paper feed PS
PS153	ADU reversal detection PS
PS154	ADU paper exit PS1
PS155	ADU paper exit PS2
PS19	Optics sync. PS
PS18	No feed

Goes OFF simultaneously with drum M.

When PS14 (registration) is turned ON by the final sheet of copy paper.

Copy ON

JAM LIST

Following jam detection is carried out in this machine.

[1] Paper Jam

	Classification	Jam code		Causes	Operation when jam occurs	Method of clearing jam
Main body and LCT	Main body paper feed jam	J10-2	When operating	PS14 (register) is not turned ON within 2 seconds from ON of SD3 (by-pass feed).	If a copy is being made when a jam occurs, copy operation is stopped after completion of exit of the copy.	Remove the original paper from by-pass try then remove the jammed paper.
		J10-4		PS30 (by-pass) is ON at the time of ON of SD3 (by-pass feed).		
		J11-1	When stationary	PS20 (pre W try (upper)) is ON during idling.		Open the main body conveyance door and remove the jammed paper and close it. Open the tray and remove the jammed paper and close it.
		J11-2	When operating	PS20 (pre W try (upper)) is not turned ON within 400 msec from ON of an SD1 (1st paper feed (upper)).		
		J11-3		PS18 (no feed) is not turned ON within 650 msec from ON of an SD1 (1st paper feed (upper)).		
		J11-4		PS20 (pre W try (upper)) is ON when SD1 (1st paper feed (upper)) goes ON.		
		J12-1	When stationary	PS21 (pre W try (lower)) is ON during idling.		
		J12-2	When operating	PS21 (pre W try (lower)) is not turned ON within 400 msec from ON of SD2 (1st paper feed (lower)).		
		J12-3		PS18 (no feed) is not turned ON within 820 msec from ON of SD2 (1st paper feed (lower)).		
		J12-4		PS21 (pre W try (lower)) is ON when SD2 (1st paper feed (lower)) goes ON.		
	LCT paper feed jam	J13-1	When stationary	PS210 (LCT pre W try (1000)) is ON during idling.		Open the LCT conveyance door and remove the jammed paper and close it. Open the tray and remove the jammed paper and close it.
		J13-2	When operating	PS210 (LCT pre W try (1000)) not turned ON within 420 msec from ON of SD141 (LCT paper feed (1000)).		
		J13-3		PS144 (LCT conveyance (1000)) is not turned ON within 2 seconds from ON of SD141 (LCT paper feed (1000)).		
		J14-1	When stationary	PS200 (LCT pre W try (1500)) is ON during idling.		
		J14-2	When operating	PS200 (LCT pre W try (1500)) is not turned ON within 370 msec from ON of SD140 (LCT paper feed (1500)).		
		J14-3		PS146 (LCT conveyance (1500)) is not turned ON within 2.4 seconds from ON of SD140 (LCT paper feed (1500)).		

	Classification	Jam code		Causes	Operation when jam occurs	Method of clearing jam
Main body and LCT	Conveyance jam	J16	When stationary	PS14 (register) is ON during idling.	The main body is stopped immediately.	Open the front door and remove the jammed paper and close it.
			When operating	PS14 (register) is not turned OFF within 1300 msec from completion of exposure.		
		J17-1	When stationary	PS18 (no feed) or PS19 (optics sync) is ON during idling.	If a copy is being made when a jam occurs, copy operation is stopped after completion of exit of the copy.	Open the conveyance door and remove the jammed paper and close it.
		J17-2	When operating	PS157 (ADU gate) is turned ON within 280 msec from start of copying.		
		J17-3		PS19 (optics sync) is not turned ON within 560 msec from ON of PS157 (ADU gate).		
		J17-4		PS19 (optics sync) is not turned ON within 430 msec from the start of reconveyance in right lengthwise transport in LCT paper feed.		
		J17-5		PS18 (no feed) is not turned ON within 390 msec from the start of reconveyance in right lengthwise transport in LCT/ADU reverse side.		
		J17-6		A loop is not completed within 400 msec from ON of a PS18 (no feed).		
	△C	J19	When stationary	PS401(LCT pass detection) or PS407(LCT feed)is ON during idling.		
			When operating	PS401(LCT pass detection)has not turn on within 300ms after 1st feeder of LCT1 was ON. PS407(LCT feed)within 440ms after 1st feeder of LCT2.		
		J21		Drum jam sensor is ON.	The main body is stopped immediately.	Open the front door and remove the jammed paper and close it.
	△C	J30-1		PS14 (regist) is not turned OFF within paper size length + 20 mm from ON of MC3 (2nd paper feed).		
	△C	J30-2		PS14(regist)is not ON when MC3(2nd paper feed)is ON		
		J31		PS25 (paper exit) is not turned ON within 2000 msec from ON of MC3 (2nd paper feed). PS25 (paper exit) was turned ON within 280 msec from copy start.		
		J32	When stationary	PS25 (paper exit) is ON during idling.		Open the paper exit and the front door and remove the jammed paper and close them.
			When operating	PS25 (paper exit) is not turned OFF/ON within 2000 msec from completion of exposure.		
ADF	ADF paper feed jam	J61	When operating	ADF was opened during ADF operation.	ADF is stopped immediately. When there is paper in or after transfer, the main body is stopped after exit of the paper.	Open ADF and remove the jammed paper and close it. If there is a jammed paper on a conveyance unit in the main body, remove it.

	Classification	Jam code		Causes	Operation when jam occurs	Method of clearing jam
ADF	ADF paper feed jam	J62	When stationary	PS304 (original passing) is ON during idling in ADF mode.	ADF is stopped immediately. When there is paper in or after transfer, the main body is stopped after exit of the paper.	Open ADF and remove the jammed paper and close it. If there is a jammed paper on a conveyance unit in the main body, remove it.
			When operating	PS304 (original passing) is not turned ON within a certain period from the start of ADF original.		
				PS304 (original passing) is not turned OFF within a certain period from its ON.		
				PS304 (original passing) ON when original setting is completed.		

	Classification	Jam code		Causes	Operation when jam occurs	Method of clearing jam
ADF	ADF paper exit jam	J63	When stationary	PS305 (original exit) is ON during idling in ADF mode.	ADF is stopped immediately. When there is paper in or after transfer, the main body is stopped after exit of the paper.	Open ADF and remove the jammed paper, if any, and close it. If there is a jammed paper on a conveyance unit in the main body, remove it.
			When operating	PS305 (original exit) is not turned ON within a certain period from the start of ADF original exit.		
				PS305 (original exit) is not turned OFF within a certain period from its ON.		
				PS305 (original exit) is not turned ON within a certain period from the start of RADF original reversing.		
FS-102	FNS conveyance jam	J72	When stationary	PS805 (paper pass 1) or PS806 (paper pass 2) are ON during idling.	Finisher/main body is stopped immediately.	If there is a jammed paper in finisher/main body, remove it.
			When operating	During operation, the front cover was opened or a finisher was separated from the main body.		
				PS805 (paper pass 1) or PS806 (paper pass 2) are not turned ON within a certain period from ON of PS25 (paper exit).		
				In finisher, paper conveyance was not carried out properly.		
	FNS paper exit jam	J74		Papers having different widthwise sizes were delivered on a staple tray.		Open finisher and remove a jammed paper, and close it.
	FNS stapler jam	J75		Stapler did not operate correctly.		Remove jammed staple from a stapler unit.
FS-103	FS-103	J72-01	When stationary	PS4(FIN entramce passing)detected paper.	FS-103/main body is stopped immediately.	Remove the jammed paper off the finisher/ main body.
		J72-02		PS5(stacker conveyance passing) detected paper.		
		J72-03		PS4(FIN entrance passing)and PS5(stacker conveyance passing) detected paper.		
		J72-04		PS6(paper exit 1)detected paper.		
		J72-05		PS4(FIN entrance passing) and PS6(paper exit 1) detected paper.		
		J72-06		PS5(stacker conveyance passing) and PS6(paper exit 1)detected paper.		
		J72-07		PS4(FIN entrance passing), PS5 (stacker conveyance passing) and PS6(paper exit 1)detected paper.		
		J72-08		PS1(printer paper exit)is ON.		
		J72-09		PS1(Printer paper exit) and PS4 (stacker conveyance passing) are ON.		
		J72-0A		PS1(Printer paper exit) and PS5(stacker conveyance passing) are ON.		
		J72-0B		PS1(Printer paper exit), PS5(stacker conveyance passing)and PS4(FIN entrance passing)are ON.		

	Classification	Jam code		Causes	Operation when jam occurs	Method of clearing Jam
FS-103	FS103	J72-0C	When Stationary	PS1(Printer paper exit) and PS6 (Paper exit 1) are ON.	FS-103/main body is stopped immediately.	Remove the jammed paper off the finisher/main body.
		J72-0D		PS1(Printer paper exit) and PS4 (FIN entrance passing) are ON.		
		J72-0E		PS1(Printer paper exit) and PS5 (Stacker conveyance passing) are ON.		
		J72-0F		PS1(Printer paper exit), PS6(paper exit 1), PS5 (stacker conveyance passing) and PS4(FIN entrance passing) are ON.		
		J72-10		PS20(stacker paper 0) is ON.		
		J72-11		PS20(stacker paper 0) and PS4 (FIN entrance passing) are ON.		
		J72-12		PS20 (stacker paper 0) and PS5 (Stacker conveyance passing) are ON.		
		J72-13		PS20(stacker paper 0), PS5 (stacker conveyance passing), and PS4(FIN entrance passing) are ON.		
		J72-14		PS20(Stacker paper 0) and PS6 (paper exit 1) are ON.		
		J72-15		PS20(stacker paper 0) and PS4 (FIN entrance passing) are ON.		
		J72-16		PS20(stacker paper 0) and PS5 (stacker conveyance passing) are ON.		
		J72-17		PS20(stacker paper 0), PS6(paper exit 1), PS5 (stacker conveyance passing) and PS4(FIN entrance passing) are ON.		
		J72-18		PS20(stacker paper 0) and PS1 (printer paper exit) are ON.		
		J72-19		PS20(stacker paper 0), PS1 (Printer paper exit) and PS4 (FIN entrance passing) are ON.		
		J72-1A		PS20(stacker paper 0), PS1 (printer paper exit) and PS5 (stacker conveyance passing) are ON.		
		J72-1B		PS20(stacker paper 0), PS1 (printer paper exit), PS5(stacker conveyance passing) and PS4(FIN entrance passing) are ON.		
		J72-1C		PS20(stacker paper 0), PS1(printer paper exit) and PS6(paper exit 1) are ON.		
		J72-1D		PS20(stacker paper 0), PS1 (Printer paper exit) and PS4 (FIN entrance passing) are ON.		

	Classification	Jam code		Causes	Operation when jam occurs	Method of clearing Jam
FS-103	FS103	J72-1E	When Stationary	PS20(stacker paper 0), PS1 (Printer paper exit), and PS5 (stacker conveyance passing) are ON.	FS-103/main body is stopped immediately.	Remove the jammed paper off the finisher/main body.
		J72-1F		PS20(stacker paper 0), PS1(printer paper exit), PS6(paper exit 1), PS5 (stacker conveyance passing) and PS4 (FIN entrance passing) are ON.		
		J72-21	When operating	PS4(FIN entrance passing) is not turned ON after paper passing through mainbody paper exit PS.		
		J72-22		PS6(paper exit 1) is not turned ON after paper passing through PS4 (FIN entrance passing) (only in offset mode).		
		J72-23		PS5(stacker conveyance passing) is not turned ON after paper passing through PS4(FIN entrance passing).		
		J72-24		PS5(stacker conveyance passing) is not turned OFF within a certain period after its ON.		
		J72-25		PS6 (paper exit 1) is not turned ON within a certain period after M7 (paper exit roller) is ON.		
		J72-26		PS6 (paper exit 1) is not turned OFF within a certain period after its ON.		
		J72-27		PS4(FIN entrance passing) is not turned OFF within a certain period after its ON.(only in printer mode.)		
		J72-31		PS17(stapler R HP) is not turned ON within a certain pariod after M10 (stapler F) is ON.		
		J72-32		PS15(stapler R HP) is not turned ON within a certain pariod after M9 (stapler R) is ON.		
		J72-33		PS15(stapler R HP) and PS17 (stapler F HP) are not turned ON within a certain period after M9 (staper R) and M10 (stapler F) are ON.		

	Classification	Jam code		Causes	Operation when jam occurs	Method of clearing jam
ADU	ADU paper feed jam	J92	When operating	PS152 (ADU paper feed) is not turned ON within 2000 msec from ON of PS25 (paper exit).	The main body is stopped immediately.	Open ADU/main body front door/lengthwise conveyance door and remove jammed paper, and close it.
		J93	When stationary	During idling, PS152 (ADU paper feed), PS153 (ADU reversal) or PS157 (ADU gate) is ON.		
			When operating	PS157 (ADU gate) is turned ON within 280 msec from the copy start.		
				CL151 (ADU paper feed) is not turned OFF within 1500 msec from ON of PS152 (ADU paper feed).		
	ADU paper exit jam	J94		PS154 (ADU paper exit 1) is not turned ON within 640 msec from OFF of PS152 (ADU paper feed).		
				PS156 (ADU paper exit 3) is not turned ON within 900 msec from ON of PS154 (ADU paper exit 1).		
		J95	When stationary	During idling, PS154 (ADU paper exit 1), PS155 (ADU paper exit 2), PS156 (ADU paper exit 3) or PS151 (ADU no paper) is ON.		
		J96	When operating	PS153 (ADU reversal) is OFF after 140 msec from OFF of PS152 (ADU paper feed).		

[2] Warning

Warning of this machine is displayed through flashing of jam code (3 digits) on magnification display LED.

	Classification	Warning code	Causes	Operation in case of warning occurrence	Releasing method
Main body	Paper feed door (upper) open	P17	Paper feed door (upper) of the main body was opened.	The main body is stopped immediately if it is in process of copying.	Close paper feed door (upper).
	Paper feed door (lower) open	P19	Paper feed door (lower) of the main body was opened.		Close paper feed door (lower).
	Paper exit door open	P33	Paper feed door was opened.		Close paper exit door.
	Front door open	P51	Front door was opened.		Close front door.
	Key counter not mounted	P81	When a key counter is not mounted on a machine to be equipped with the key counter.	When a key counter is drawn out in the course of book copying, paper in copying is stopped by paper exit. However, when a key counter instant cut mode is selected, the main body is stopped immediately.	Mount a key counter. In this case, resetting is made to initially set state. However, in the case of instant cut mode, remove jammed paper, if any.
	L detection connector coming off	P27	When L detection output does not vary after a certain period from the start of copy operation.	Before the start of copying, warning is displayed. After the start of copying, the main body is stopped after ejecting all papers under processing, and warning is displayed.	Insert connector after turning main switch OFF, and then turn it ON.
	Memory card not inserted	P82	When a memory card is not mounted on a machine to be equipped with the memory card.	When a key counter is drawn out in the course of book copying, paper in copying is stopped by paper exit.	Insert memory card.
	Electronic RDH memory overflow	P45	In the case of overflow of memory in a mode of using E-RDH.	In the case of occurrence in collective reading, warning display and guidance by MSG are conducted, and when ADF is used, an original is ejected forcedly for the stop. In the case of occurrence in real time output, warning display and guidance by MSG are conducted after completion of partial output.	Change the number of originals and read again.
	ADU open	P91	When ADU is drawn out.	The main body is stopped immediately if it is in process of copying.	Set ADU.
	Tray 3 over loading of transfer papers	P13	When tray 3 is mounted, upper limit detection sensor is ON (over loading) from the beginning.	Only in idling, “draw out tray 3” and “remove paper” are displayed on detection MSG.	Draw out the corresponding tray. Or, reduce the number of papers.
	Tray 4 over loading of transfer papers	P14	When tray 4 is mounted, upper limit detection sensor is ON (over loading) from the beginning.		

	Classification	Warning code	Causes	Operation in case of warning occurrence	Releasing method
ADF	Reversal enclosure open	P61	Reversal enclosure of RADF was opened during idling.	–	Close reversal enclosure.
	Leaving an original	P64	After non-ADF copying, ADF mode was selected without removing original by opening/closing ADF.	–	Remove original by opening and closing ADF.
	*1 Drawing out of original	P68	Original was drawn out during book copying.	The main body judges that job set has been completed, and ADF and the main body are stopped after the number of sets of copies established under processing are finished, and then warning is displayed.	et original after drawing it once. Recovery is not conducted.
	*1 No feed	P69	Original no feed was caused in ADF mode.	The main body judges to be original no feed, and ADF and the main body are stopped after the copies under processing are finished, and then warning is displayed.	Set original after drawing it once. Conduct JOB recovery operation. (However, remaining paper treatment is necessary when papers remain in the main body in book copying.)
Finisher	Paper remaining on tray	P74	During idling or copying, tray paper detection or staple tray detection detected paper.	After receiving from finisher the signal showing excessive sheets loading, warning is displayed at a pause of the number of sets.	Remove paper on a tray. (Continue remaining output operation with copy ON.)
	No staple in stapler	P76	Staples in a staple cartridge were used up.	In operation of staple mode, copying is continued until the number of sheets to be stapled is reached.	Load a new staple cartridge.
	Stapler unit not mounted	P78	Stapler unit is not mounted.	–	Set a stapler unit.

*1: During copying operation, when ADF original is drawn out or inserted on purpose, either P68 or P69 may occur depending on its detecting timing. Operations after clearing an error depends on warning code.

[3] Trouble

	Classification	Warning code	Causes	Operation in case of warning occurrence	Releasing method	Estimated abnormal parts
Main body	Paper feed lifting trouble	F18-1 (upper)	PS16 (upper limit (upper)) is not turned ON within 7.5 seconds from ON of M17 (upper try).	The main body is stopped immediately if it is in process of copying, and main relay is turned OFF.	OFF of main switch → ON	CB (Control board) M17 (Upper try) PS16 (upper limit (upper))
		F18-2 (lower)	PS17 (upper limit (lower)) is not turned ON within 7.5 seconds from ON of M18 (lower try).			CB (Control board) M18 (Lower try) PS17 (Upper limit (lower))
		F18-3 (10)	PS143 (LCT upper limit (1000)) is not turned ON within 7.5 seconds from ON of M142 (LCT try (1000)).			CB (Control board) M142 (LCT try (1000)) PS143 (LCT upper limit (1000))
		F18-4 (15)	PS142 (LCT upper limit (1500)) is not turned ON within 7.5 seconds from ON of M141 (LCT try (1500)).			CB (Control board) M141 (LCT try (1500)) PS142 (LCT upper limit (1500))
	Wire cleaning trouble	F22-1	Operation for charging corona wire cleaning was tried, but it was locked. Or, it was locked on the half way.	Main relay is turned OFF and all keys are not accepted.		Charging corona unit DCDB (DC driver board)
		F22-2	Operation for transfer and separation corona wire cleaning was tried, but it was locked. Or, it was locked on the half way.			Transfer/separation unit DCDB (DC driver board)
	High voltage power source trouble	F28-1	When charging output is judged to be abnormal discharge.	The main body is stopped immediately if it is in process of copying, main relay is turned OFF, and all keys are not accepted.	OFF of main switch → ON Remove jammed paper, if any.	Charging corona unit HV1 (High voltage unit 1)
		F28-2	When transfer output is judged to be abnormal discharge.			Transfer unit HV2 (High voltage unit 2)
		F28-3	When separation output is judged to be abnormal discharge.			Separation unit HV2 (High voltage unit 2)
	Fixing high temperature trouble	F34-1	Fixing temperature is exceeding about 220˚C. (Fixing high temperature trouble detection circuit operates.)	Main relay is turned OFF, and all keys are not accepted.	Change a key word at address of "P47" to "0" in 25 mode.	TH1 (Fixing temperature sensor 1) TH2 (Fixing temperature sensor 2)
		F34-2	Fixing temperature is exceeding about 220˚C. (Fixing high temperature trouble detection circuit operates.)			
	Fixing low temperature trouble	F35-1	Warm-up is not completed within a certain period from the start of the warm-up. (Fixing low temperature trouble detection software operates.)			TH1 (Fixing temperature sensor 1) TH2 (Fixing temperature sensor 2) L2 (Fixing heater lamp (upper)) L4 (Fixing heater lamp (lower)) Fixing unit insertion failure
		F35-2	After completion of warm-up, fixing temperature is lower than a prescribed temperature. (Fixing low temperature trouble detection software operates.)			

	Classification	Warning code	Causes	Operation in case of warning occurrence	Releasing method	Estimated abnormal parts
Main body	Snapping of fixing sensor	F36-1	A prescribed temperature is not reached within 40 seconds from the start of warm-up. (Fixing sensor snapping detection software operates.)	Main relay is turned OFF, and all keys are not accepted.	Change a key word at address of "P47" to "0" in 25 mode.	CB (Control board) TH1 (Fixing temperature sensor 1) TH2 (Fixing temperature sensor 2) Fixing unit insertion failure
		F36-2	A prescribed temperature is not reached within 40 seconds from the start of warm-up. (Fixing sensor snapping detection circuit operates.)			
	Optics returning trouble	F41-1	Each PS in optics is not turned ON within 5 seconds from the start of optics returning in initial search. (PS3 (shading position),PS4 (paper feed restart),PS5 (optics return),PS7 (optics timing))	The main body is stopped immediately, main relay is turned OFF, and all keys are not accepted.	OFF of main switch → ON Remove jammed paper, if any.	OPMDB (Optics drive motor drive board) PS3 (Shading position) PS4 (Paper feed restart) PS5 (Optics return) PS7 (Optics timing) Exposure unit
		F41-2	Home position sensor is not turned ON when optics stops in optics returning.			OPMDB (Optics drive motor drive board) CB brake data
		F41-3	Optics return signal is not turned ON within 120 msec from start of brake when optics returning. Original glass detection is OFF.			
	Glass open trouble	F41-4	PS8 (glass) is OFF.		Set original glass, and OFF → ON of main switch.	PS8 (Glass) Original glass mounting failure
	CVR trouble	F43-1	During copying, FB signal of L1 (exposure lamp is ON or is snapped) is ON for 20 seconds or more. (detected by software)	The main body is stopped immediately if it is in process of copying, main relay is turned OFF, and all keys are not accepted.	OFF of main switch → ON Remove jammed paper, if any.	CB (Control board) DCPS2 (DC power supply unit 2) L1 (Exposure lamp) Exposure temperature fuse
		F43-2	When software detects that FB signal of L1 (outputted when exposure lamp is ON or is snapped) is not turned ON even after the lapse of 1 second after the outputting of L1 lighting signals.			
		F43-3	FB signal of L1 is ON for 45 seconds in a self-diagnosis mode and for 21 seconds in all cases other than the above. (detected by hardware)			
		F43-4	FB signal of L1 (outputted when exposure lamp is ON or is snapped) is ON for 21 seconds or more during idling. (detected by software)			

	Classification	Warning code	Causes	Operation in case of warning occurrence	Releasing method	Estimated abnormal parts
Main body	Image processing error	E46-0	During APC, when LDB1 (laser diode board 1) orLDB2 (laser diode board 2) sensed an error.	In the case of during copying, the main body is stopped immediately. The main relay is turned OFF and All keys are not accepted.	Turn the main switch from OFF to ON. If there is a jamming paper, remove it.	IPB (Image processing board) LDB1 (Laser diode board 1) LDB2 (Laser diode board 2) Laser interlock
	△C	E46-1	(Not used).			
		E46-2	An error of the FIFO of the E-RDH.			E-RDH (Electronic RDH control board)
		E46-6	An error of the extension of the E-RDH.			E-RDH (Electronic RDH control board)
		E46-8	An error in the INDEXSB (index sensor board). When no change is observed in outputting the NDEXSB in executing the APS.			INDEXSB (Index sensor board) PB (Image processing board) LDB1 (Laser diode board 1) LDB2 (Laser diode board 2) Laser interlock DCPS3 (DC power supply unit 3)
		E46-9	Compression IC error. When DTACK is not returned from the compression IC.			E-RDH (Electronic RDH control board)
	Image processing CPU error	E47-0	Communication is not returned from the CPU of the IPB (image processing board).	Only during idling, it occurs. The main body stops immediately.	Turn the main switch from OFF to ON.	IPB (Image processing board) Bundle
		E47-1	Paper arrived at the 2nd paper feed position too earlier.	Only during copying, it occurs.The main body stops immediately.	Turn the main switch OFF to ON after jam clearance.	MC8(Conveyance) IPB(Image processing board)
	△C	E47-2	AD board During shooting Auto Gain Control	It may occur only when AGC is carried out during idling.	Turn the main switch from OFF to ON.	IPB (Image processing board) ADB (A/D board)
	Sub-scanning Beam correction error	E48	To a sub-scanning beam correction order, when a complete command is not returned within 10 seconds.	Only during idling, it occurs. The main body stops immediately.		IPB (Image processing board) LDB1 (Laser diode board 1) LDB2 (Laser diode board 2) M40 (Laser revise)
	Image processing Connection error	F49-0	The E- RDH is not connected.	When the power supply is charged, it is sensed. The main relay is turned OFF and All keys are not accepted.	Turn the main switch from OFF to ON. If there is a jamming paper, remove it.	E-RDH (Electronic RDH control board)
		F49-1	ADB (AD conversion board) is not connected.			ADB (AD conversion board)
		F49-2	The laser driver board/1 is not connected.			LDB1 (Laser diode board 1)
		F49-3	The laser driver board/2 is not connected.			LDB2 (Laser diode board 2)
		F49-4	The index-sensing board is not connected.			INDEXSB (Index sensor board)
		F49-5	The sub-scanning correction board is not connected.			M40 (Laser revise)

	Classification	Warning code	Causes	Operation in case of warning occurrence	Releasing method	Estimated abnormal parts
Main body	Motor speed abnormality	F51-1	Speed abnormality in a M35 (developing screw).	The main body is stopped immediately. The main relay is turned OFF and All keys are not accepted.	Turn the main switch from OFF to ON.	M35 (Developing screw) DCDB (DC drivr board)
		F51-2	Speed abnormality in the M1 (main).			M1 (Main) DCDB (DC drivr board)
		F51-3	Speed abnormality in the M10 (toner supply).			M10 (Toner supply) DCDB (DC drivr board)
		F51-4	Speed abnormality in the M3 (developing drive).			M3 (Developing drive) DCDB (DC drivr board)
		F51-5	Speed abnormality in the M4 (drum).			M4 (Drum) DCDB (DC drivr board)
		F51-6	Speed abnormality in the M5 (polygon).			M5 (Polygon) PBDB (Polygon drive board) DCDB (DC drivr board)
		F51-7	Speed abnormality in the M151 (ADU paper feed).	During copying, after all papers fed are exited, the main body is stopped, and All keys are not accepted.		M151 (ADU paper feed) DCDB (DC drivr board)
		F51-8	Speed abnormality in the M140 (LCT paper feed).			M140 (LCT paper feed) DCDB (DC drivr board)
		F51-9	Speed abnormality in the M12 (optics drive).	The main body is stopped immediately only during shading correction behavior, and All keys are not accepted.		M12 (Optics drive) OPMDB (Optical drive motor drive board)
	Fan lock abnormality	F52-1	Locking abnormality in the FM16 (main body cooling fan).	After set JOBs are completed, the left-mentioned warnings are displayed.		FM16 (Main body cooling fan)
		F52-2	Locking abnormality in the FM14 (conveyance suction fan).			FM14 (Conveyance suction fan)
		F52-3	Locking abnormality in the FM30 (developing suction fan).			FM30 (Developing suction fan)
		F52-4	Locking abnormality in the FM2 (optics cooling fan).			FM2 (Optics cooling fan)
		F52-5	Locking abnormality in the FM15 (E-RDH cooling fan).			FM15 (E-RDH cooling fan)
		F52-6	Locking abnormality in the FM11 (polygon cooling fan).			FM11 (Polygon cooling fan)
		F52-7	Locking abnormality in the M152 (ADU fan).			M152 (ADU fan)
ADF	ADF abnormality	E60	Communication between the main body CB and the ADF is discontinued for a certain time or more.	The main body and the ADF are stopped immediately. The main relay is turned OFF and All keys are not accepted.	Turn the main switch from OFF to ON. If there is a jamming paper, remove it.	CB (control board) ADF CB (ADF control board)
		E67	During the ADF working, a signal from the PS307 (ADF encoder) is not sent in a certain time.	The ADF is stopped immediately. With regard to the main body, after completing copying in working, the main relay is turned OFF.		ADF CB (ADF control board) M301 (ADF drive)

	Classification	Warning code	Causes	Operation in case of warning occurrence	Releasing method	Estimated abnormal parts
FS-102	FS-102 abnormality	E70	Communication abnormality	The main body and the finisher is stopped immediately. The main relay is turned OFF and All keys are not accepted.	Turn the main switch from OFF to ON.	FNS CB (FNS cntrol board) Connector
		F77-1	M801 (Conveyance) abnormality			FNS CB (FNS cntrol board) M801 (Conveyance)
		F77-2	M802 (1st exiting) abnormality			FNS CB (FNS cntrol board) M802 (1st exit)
		F77-3	M803 (2nd exiting) abnormality			FNS CB (FNS cntrol board) M803 (2nd exit)
		F77-4	M804 (Tray elevation upward/ downward) abnormality			FNS CB (FNS cntrol board) M804 (Tray elevation upward/ downward)
		F77-5	M805 (Tray shift) abnormality			FNS CB (FNS cntrol board) M805 (Tray shift)
		F77-6	M806 (Staple guide) abnormality			FNS CB (FNS cntrol board) M806(Staple guide)
		F77-7	M807 (Staple) abnormality			FNS CB (FNS cntrol board) M807(Staple)
		F77-8	M808 (Oscillating unit) abnormality			FNS CB (FNS cntrol board) M808 (Oscillating unit)
FS-103	M2 (roller shift) abnomality	E77-01	<When copying> After the roller starts transferring, it does not reach the shift position. (PS18(roller shift HP) is not turned ON). After the roller starts returning, PS18(roller shift HP) is not turned ON. <When the power is ON/When the door opens or closes> After M2 starts operating, PS18 (roller shift HP) is not turned ON.	The main body is stopped immediately and the main relay is turned OFF, rejecting any key input.	Set the main switch to ON/ OFF. Remove any jammed paper.	M2 (roller shift), PS18 (roller shift HP)
	M3 (tray UP/ DOWN) abnomality	E77-02	After M3 (tray UP/DOWN) starts moving, PS2 (tray upper limit) or PS7 (stapled paper exit upper limit) is not turned ON.			M3 (tray UP/DOWN), PS2 (tray upper limit), PS7 (stapled paper exit upper limit)
	M5 (register plate) abnomality	E77-03	After M5 (register plate) starts operating, PS8 (register plate HP) is not turned OFF within a certain period, or it is not turned ON after its OFF.			M5 (register plate), PS8 (register plate HP)
	M7 (paper exit roller) abnomality	E77-04	After M7(paper exit roller) starts moving, PS9 (paper exit belt HP) is not turned ON. (only in staple mode).			M7 (paper exit roller), PS9 (paper exit belt HP)
	M8 (paper exit) abnomality	E77-05	After M8 (paper exit) starts moving, opening/closing action does not stop within a certain period. (PS12 (paper exit) is not tuned ON or OFF).			M8 (Paper exit) , PS12 (paper exit)

	Classification	Warning code	Causes	Operation in case of warning occurrence	Releasing method	Estimated abnormal parts
FS-102	M11 (stapler transfer) abnormality	E77-06	After M11 (stapler) starts operating, PS11 (stapler transfer HP) is not turned OFF. Or it is not turned ON after its OFF.	The main body is stopped immediately and the main relay is turned OFF, rejecting any key input.	Set the main switch to ON/ OFF. Remove any jammed paper.	M11 (stapler) PS11 (stapler transfer HP)
	M12 (stapler rotary) abnormality	E77-07	After two places are stapled and M12 (stapler rotary) rotates, PS21 (stapler rotary HP1) and PS22 (stapler rotary HP2) are not turned ON. (diagonal rotation is not properly completed).			M12 (stapler rotary) PS21 (stapler rotary HP1) PS22 (stapler rotary HP2)
		E77-08	After MS12 (stapler rotary) starts moving, the stapler vertical rotation is not properly completed while selecting two staple places.			
	PS20 (stacker paper zero sensor) abnomality	E77-09	PS20 actuator is stuck and does not return.			PS20 (stacker paper zero sensor)
	M10 (stapler F) abnormality	F77-11	PS17 (stapler F HP) is not turned ON after M10 started reverse rotation by detecting J72-31/J72-33.			M10 (stapler F) PS17 (stapler F HP)
	M9 (stapler R) abnormality	F77-12	PS15 (stapler R HP) is not turned ON after M9 started reverse rotation by detecting J72-32/J72-33.			M9 (stapler R) PS15 (stapler R HP)
Weekly timer	Weekly timer abnormality	E80	Communication abnormality between the weekly timer and the main body.	Stop communication, The main relay is turned OFF and All keys are not accepted.	Turn the main switch from OFF to ON.	Weekly timer
Main body	Power supply abnormality	F83-1	40V has not arrived from the DCDB (DC drivr board).	When the power supply abnormality is sensed in idling, The main relay is turned OFF and All keys are not accepted.		DCPS1 (DC power supply unit 1) DCDB (DC drivr board) CB (Control board)
		F83-2	24V (for the main body) has not arrived from the DCDB (DC drivr board). (The door is closed.)			DCPS1 (DC power supply unit 1) DCDB (DC drivr board) CB (Control board)
		F83-3	24V (for option use) has not arrived from the DCPS2 (DC power supply unit 2).			DCPS2 (DC power supply unit 2) CB (Control board)
		F83-4	12V has not arrived.			DCPS1 (DC power supply unit 1) CB (Control board)
		F83-5	8V has not arrived.			DCPS1 (DC power supply unit 1) CB (Control board)
		F83-7	Processing system 5V has not arrived.			DCPS3 (DC power supply unit 3) CB (Control board)

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Operations for KRDS error depend on the setting in the memory DIP SW area, byte 39.

	Classification	Warning code	Causes	Operation in case of warning occurrence	Releasing method	Estimated abnormal pats
	KRDS memory data unmatching error	KRDS system error 0	Memory data in KRDS is different from that in copier when turning on copier.	byte39-bit0:copy enable Error is displayed in message area. Copy operation is enabled.	Initialize KRDS memory so that it can be consistent with that for the copier. (Re-execute set up procedure.) Then complete byte 33, bit0.	
		FJ0		byte39-bit0:copy disable Error is displayed in message and magnification indication area. Copy operation is disabled.		
	Communication error between copier and KRDS	KRDS system error 1	Communication IC error is detected. (parity, framing error, etc.)	byte39-bit1:copy enable Error is displayed in message area. Copy operation is enabled.	Same as the above	
		FJ1		byte39-bit1:copy disable Error is displayed in message and magnification indication area. Copy operation is disabled.		
	RS232C line error	KRDS system error 2	Error has occurred in control signal of modem cable (RS232C) connecting KRDS to modem.	byte39-bit2:copy enable Error is displayed in message area. Copy operation is enabled.	Check if the modem power is turned on. Check if the cable is correctly connected.	
		FJ2		byte39-bit2:copy disable Error is displayed in message and magnification indication area. Copy operation is disabled.		
	Modem AT command error	KRDS system error 3	Modem control command error is detected. (For KRDS, this error is indicted after retry is repeated 10 times.)	byte39-bit3:copy enable Error is displayed in message area. Copy operation is enabled.	Turn on copier after modem set up (memory DIP SW area) is checked.	
		FJ3		byte39-bit3:copy disable Error is displayed in message and magnification indication area. Copy operation is disabled.		
	Communication error between host and KRDS	KRDS system error 4	Communication IC error is detected. (parity, framing error, etc.)	byte39-bit4:copy enable Error is displayed in message area. Copy operation is enabled.		
		FJ4		byte39-bit4:copy disable Error is displayed in message and magnification indication area. Copy operation is disabled.		
	Copy immediate stop indication	PJ5	This is indicated if immediate stop is specified for KRDS DIP SW byte 39 and 40. (Remote control is available from copier or host computer.)	byte40-bit0:STOP and byte39-bit5:copy disable Error is displayed in message and magnification indication area. Copy operation stops after the serial copy is finished.	Set to byte40-bit0:copy and byte39-bit5:copy enable, then unlock the immediate stop. (Remote control is available from copier or host computer.)	

LIST OF COME-OUT CONNECTOR(Reference only)

When each abnormality occurs, there is a possibility that the following connectors are come out. When an objective connector is connected normally, conduct trouble shooting in accordance with a jamming list.

[1] Paper Jamming

Code	Number of come-out connector
J10	CN53(Paper feeding), CN233(Paper feeding)
J11	CN33(Side of the control board), CN38(Paper feeding), CN80(Paper feeding), CN91(DC driving board), CN122(Paper feeding), CN230(Paper feeding), CN234(Paper feeding), CN327(Paper feeding),
J12	CN33(Side of the control board), CN38(Paper feeding), CN80(Paper feeding), CN91(DC driving board), CN123(Paper feeding), CN231(Paper feeding), CN234(Paper feeding), CN328(Paper feeding),
J13	CN13(Paper feeding), CN203(Rear of the control board), CN204(Rear of the control board), CN705(DC driving board), CN720(LCT vertical conveyance), CN721(LCT vertical conveyance), CN726(LCT vertical conveyance)
J14	CN203(Rear of the control board), CN204(Rear of the control board), CN705(DC driving board), CN712(LCT horizontal conveyance), CN714(LCT horizontal conveyance), CN716(LCT horizontal conveyance)
J17	CN64(Reper feeding), CN73(Optical), CN141(Paper feeding)
J19	CN703(DC driving board), CN713(LCT horizontal conveyance), CN722(LCT relay), CN725(Lower left of the rear), CN727(LCT horizontal conveyance)
J21	CN34(Drum), CN62(Control board), CN85(On the control board), CN87(2nd paper feeding)
J30	CN86(2nd paper feeding)
J31	CN32(2nd paper feeding), CN42(Upper portion of the control board), CN46(2nd paper feeding)
J32	CN6(Control board), CN40(Fixing), CN98(Above the DC driving board), CN392(Fixing drawer)
J92	CN555(ADU), CN562(ADU vertical conveyance)
J93	CN551(ADU), CN556(ADU)
J94	CN532(ADU), CN534(ADU), CN550(ADU), CN553(ADU), CN557(ADU), CN559(ADU)
J96	CN552(ADU)

[2] Warning

Code	Number of come-out connector
P17	CN7(Control board), CN17(Paper feeding)
P27	CN5(Control board), CN50(Above the drum drawer), CN51(Drum), CN63(Upper left of the rear)
P33	CN530(ADU vertical conveyance), CN561(ADU vertical conveyance)
P51	CN381(Upper left of the front), CN395(Power supply at the lower right of an exiting paper surface)
P81	CN2(Power supply at the lower right of an exiting paper surface), CN61(Control board)

[3] Trouble

Code	Number of come-out connector
E46	CN8(Control board), CN54(Upper left of the front surface)
E47	CN396(Power supply at the lower right of the rear surface), CN401(Power supply at the lower right of the rear surface), CN425(Image processing board), CN430(Image processing board), CN481(Control board)
E80	CN413(Control board), CN471(Weekly timer), CN472(Weekly timer)
F18-1	CN23(Paper feeding)
F18-2	CN24(Paper feeding)
F18-3	CN732(Lower left of the rear surface)
F18-4	CN731(Lower right of the rear surface)
F22-1	CN21(Drum), CN39(Drum), CN50(Above the drum drawer), CN63(Upper left of the rear surface)
F22-2	CN42(Above the control board), CN168(2nd paper feeding)
F35-1	CN81(Lower right of the DC driving board), CN399(Lower of the paper exiting surface)
F36-2	CN98(Above the DC driving board), CN392(Fixing drawer)
F41-2	CN66(Optical)
F41-4	CN22(Control board), CN67(Optical), CN142(Left of the optical rear surface)
F43-2	CN385(Lower left power supply of the paper exiting surface)
F49-0	CN428(Image processing board), CN450(Electronic RDH board)
F49-1	CN411(A/D board), CN420(Image processing board)
F49-2	CN421(Image processing board), CN440(Writing)
F49-3	CN422(Image processing board), CN441(Writing)
F49-4	CN423(Image processing board), CN442(Writing)
F49-5	CN424(Image processing board), CN443(Writing)
F50	CN161(Upper left of the rear surface)
F51	CN16(Above the DC driving board), CN65(Control board), CN75(DC driving board), CN96(DC driving board), CN202(DC driving board), CN203(DC driving board), CN204(Above the DC driving board), CN205(Above the DC driving board)
F51-9	CN9(Control board), CN72(Rear of the optical motor), CN74(Rear of the optical motor), CN76(Rear of the optical motor), CN92(Rear of the optical motor)
F52	CN97(Optical)
F53	CN12(Lower right of the front surface), CN14(Toner replenishing)
F55	CN48(Upper left of the front surface), CN329(DC driving board)
F56	CN11(Above the control board), CN15(Above the control board)
F57	CN49(Above the exited paper surface), CN93(Above the exited paper surface)
F58	CN94(Upper right of the DC driving board), CN521(DC driving board), CN554(ADU), CN564(ADU vertical conveyance)
F59	CN124(Upper left of the rear surface), CN125(Upper left of the rear surface), CN200(DC driving board), CN201(Upper left of the rear surface)
F67	CN28(Lower left power supply of the paper exiting surface), CN382(Lower left power supply of the paper exiting surface)
F83-1	CN30(Control board), CN88(Lower right power supply of the paper exiting surface), CN90(DC driving board), CN99(DC driving board)
F83-2	CN88(Lower right power supply of the paper exiting surface), CN99(DC driving board), CN150(Control board), CN151(DC driving board)
F83-3	CN29(Lower left power supply of the paper exiting surface), CN60(Control board)
FJ3	CN476(Weekly timer), CN477(Weekly timer)

[4] Others

Classification	Phenomenon	Number of come-out connector
Power supply abnormality	Power supply was not turned ON.	CN383(Upper left of the front surface), CN390(Lower right of the rear surface), CN393(Lower of the rear surface), CN397(Lower right power supply of the paper exiting surface), CN398(Weekly timer), CN475 (Weekly timer), CN479(Weekly timer), CN752(Lower right of the rear surface)
Operation unit abnormality	All LED were not lit.	CN1(Lower right power supply of the paper exiting surface), CN3(Control board), CN4(Control board), CN212(Operation unit)
	LEDs for special functions were not lit.	CN211(Operation unit), CN222(Operation unit), CN221(Operation unit), CN227(Operation unit)
	LEDs on the left side were not lit.	CN220(Operation unit), CN232(Operation unit)
	Above the fluorescent display tube was not lit.	CN8(Control board), CN213(Operation unit), CN215(Operation unit), CN300(Operation unit), CN500(Operation unit)
	Below the fluorescent display tube was not lit.	CN8(Control board), CN213(Operation unit), CN215(Operation unit), CN301(Operation unit), CN501(Operation unit)
	All key did not accepted.	CN10(Operation unit)
	Display regarding the weekly timer did not come appear.	CN414(Operation unit)
	Special function keys were not accepted.	CN211(Operation unit), CN222(Operation unit)
Image abnormality	Density was faint.	CN17(Toner replenishing), CN216(DC driving board), CN217(Upper left of the front surface)
	White paper	CN62(Control board)
	Slight dirt on a white paper	CN84(Upper of the rear surface)
	Fewer image on a white paper	CN85(Above the control board), CN87(2nd paper feeding)
	Entirely black	CN380(Lower left power supply of the paper exiting surface), CN384(Optical), CN388(Optical), CN400(Power supply at the lower right of the rear surface), CN410(A/D board), CN412(Optical)
	Front surface and rear surface were slipped.	CN68(Paper feeding), CN144(Control board), CN145(Paper feeding), CN147(Paper feeding)
Abnormality during warming up	Warming up is not completed.	CN337(Lower left of the front fixing), CN81(Lower right of the DC driving board), CN82(Upper left of the front), CN399(Lower of exited paper surface)
	Shading is not completed.	CN78(Power source of the lower right of the exited paper surface), CN95(Writing portion of the paper feeding surface), CN223(Control board), CN224(Optical driving board), CN225(Optical driving board), CN226(Optical driving board), CN228(Optical driving board), CN320(Writing), CN321(Writing)
Lamp abnormality	Exposure lamp is not lit.	CN381(Lower left of the front surface), CN384(Optical), CN385(Power source of the lower right of the exited paper surface), CN388(Optical)
	Upper fixing lamp was not lit.	CN81(Lower right of the DC driving board), CN399(Lower of exited paper surface)
	Lower fixing lamp was not lit.	CN29(Power source of the lower left of the exited paper surface), CN81(Lower right of the DC driving board), CN380(Power source of the lower left of the exited paper surface)
Dirt	Adhesion of carrier	CN20(Drum), CN31(Upper of the rear surface), CN70(Upper left of the rear surface)
	Front edge or rear edge was dirty.	CN31(Upper of the rear surface), CN71(Upper of the control board)

Classification	Phenomenon	Number of come-out connector
Operation abnormality	Touch the right side of optical.	CN73(Optical), CN77(Optical)
	Upward/downward elevation motor continued to rotate. (Gear is damaged)	CN25(Paper feeding), CN58(Paper feeding), CN59(Paper feeding), CN79(Paper feeding)
	LCT elevation motor continued to rotate. (Gear is damaged)	CN701(DC driving board), CN711(1500LCT), CN724(1000LCT), CN728(1000 LCT drawer)
	Total counter was not operated.	CN41(Upper left of the front surface)
	APS did not function.	CN137(Optical), CN143(Optical), CN146(Optical), CN152(Left of the rear of optical)
	APS sensed erroneously.	CN130(Optical), CN133(Optical), CN134(Optical), CN138(Optical), CN163(Left of the rear of optical)
Recognition abnormality	FIN did not recognize (Only G mode could be selected or not operated.)	CN43(Power source of the lower left of the exited paper surface), CN101(Right (lower) of rear surface), CN114(Control board)
	ADF was not recognized.	CN102(Right (upper) of the rear surface), CN116(Control board)
	ADF was not recognized. (Only 1-1 and 2-1 could be recognized.)	CN505(ADU drawer), CN510(DC driving board), CN531(ADU)
	The upper/lower step tray could not be recognized.	CN56(Rear of the control board)
	LCT was not recognized.	CN120(Control board), CN121(DC driving board), CN706(DC driving board), CN709(1500LCT drawer), CN733(LCT stand), CN734(LCT stand)
Recognition abnormality	Paper on a tray was not sensed. (“There is a paper” display that a paper will be replenished.)	CN44(Paper feeding), CN45(Paper feeding), CN47(Paper feeding) CN710(1500LCT), CN723(1000LCT)
	Weekly timer did not recognize.	CN413(Control board), CN471(Weekly timer), CN472(Weekly timer)
	KRDS did not recognize.	CN135(Control board), CN473(Weekly timer), CN472(Weekly timer)
	Guillotine occurred in the vicinity of ADU inlet.	CN560(ADU vertical conveyance)
Others	“J21” did not appear in the case of drum-winding jamming.	CN324(Upper of the control board), CN325(Lower of the drum drawer)

5

ADJUSTMENT

5. ADJUSTMENT

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HOW TO USE THE ADJUSTMENT MANUAL

This section details adjusting items and procedures. Use this section for making adjustments and as a checklist before implementing corrective measures in the field.

1. Does the power supply meet the requirements?
2. Is the power supply properly grounded?
3. Is the machine sharing its power source with another high current consumption machine that draws large currents intermittently? (e.g. an elevator, air conditioner, or other source of electrical consumption)
4. Is the installation environment suitable?
    a. High temperature and high humidity, direct sun light and ventilation.
    b. Horizontal condition of a place where a machine is installed.
5. Does the cause of a defective image lie in the original itself?
6. Is the density adjusting control at the proper position?
7. Are the platen glass and ADF conveyance belt clean?
8. Is the correct paper being used for the copy?
9. Are the copying materials when they reach the end of their usable life? (developer, drum, cleaning blade, etc.)
10. Is there toner in the machine?

The following items should also be observed when repairing the machine.

1. Only one side of the AC power line is disconnected when the main switch of this machine is turned off. Always unplug the machine before beginning work. If absolutely necessary to work with the power on, exercise care to avoid being caught in the scanning rear of the exposure unit.
2. Special care should be taken when handling the fixing unit since it operates at extremely high temperatures.
3. The developing unit is surrounded by a strong magnetic field. Keep watches and metering equipment away from it.
4. Avoid scarring the drum with tools or similar objects.
5. Do not touch IC pins with your bare hands.

ADJUSTMENTS WHEN REPLACING PARTS

Adjustments (including checks) and settings are not only required when a defective copy image occurs, but also after replacing or reinstalling certain parts.

[How to Use the Tables]
The following items are used in the tables throughout this section.

1. Mode

Indicates the adjustment mode.
[47] : 47 mode
[25] : 25 mode
[36] : 36 mode
[35] : 35 mode
[–] : Normal mode

2. Code

It shows a code used in each mode and a copy quantity setting button.

3. VR

- [–] None
- Indicates the VR number on the CB1 (Main body control board).
- Indicates the board name when neither VR or DSW applies.

4. Page

Indicates the page to refer to in the Adjustment section.

5. Conditions

New:	Indicates adjustment (including check) is required when replacing a new part.
Reset:	Indicates adjustment (including check) is required when a part has been re-installed.

6. Symbols used in the tables

① ② ················	Indicates there is a priority sequence for adjustments (including checks) and settings.
○ (Empty circle):	Indicates adjustments (including checks) and settings that can be carried out independently.

		No.	1	2	3	4	5	6	7	8	9	10
		Adjustment and setting item	Charging Grid Voltage Adjustment	L Detection Adjustment	Front Edge Timing Adjustment (CopyType)	Front Edge Timing Adjustment (E-RDH Type)	Adjustment the Amount of Erasing the Front Edge of the Original	Horizontal Magnification Adjustment	Paper Feeding Loop Amount Adjustment	Setting Paper Size for Tray 2.3 and 4	Adjustment of Gradation Property	Drum counter reset
		Mode	47	47	36	36	36	36	36	25	35	47
		Code	007	095	91	98	92	93	94	69	80	91
No.	Part Name	Page Condition	5-13	5-15	5-39	5-40	5-40	5-41	5-41	5-32	5-63 5-64	
1	Drum	New	①								②	③
2	Developer	New		①							②	
3	Optics wire	New Reinstall						○				
4	Writing unit	New Reinstall									○	
5	Memory IC	New	○	○	○	○	○	○	○	○	○	
6	Change of paper size for tray 2.3and4	-								○		

- **New means replace with a new part and reset means to reset the part.**
- **The circles will have a number when there is an adjustment priority.**

SETTING AND CHECKING WITH THE P FUNCTION

P function is a function capable of setting and confirming various numerals.

With regard to an item to be confirmed, press a number coming under by a copy quantity setting button, while pressing the P button. On a copy number display section or a message display, an set value is displayed.

In addition, with regard to an item to be set, see each page coming under.

[1] List of Confirmation Item by Means of the P Function

There are 6 kinds as follows in the confirmation items by means of the P function.

Item	Operation button	Remarks
Total count	Ⓟ+①	Resetting impossible
Density shift	Ⓟ+③	Setting possible (See item **[3]**)
Developing count	Ⓟ+④	Resetting possible (Set by 47-95 mode.)
PM count	Ⓟ+⑤	Resetting possible (Set by 47-90 mode.)
Drum count	Ⓟ+⑦	Resetting possible (Set by 47-91 mode.)
EKC/data control	Ⓟ+⑨	Setting possible (See item **[5]**)

[2] Confirmation and Resetting of the PM Count

1. Confirmation method

Step	Operation (display)	Operation point
1	While pressing the P button, press the copy quantity setting button 5.	P button Copy quantity setting button
2	Confirm the PM count by means of a message display.	

2. Resetting method

Step	Operation (display)	Operation point
1	While pressing the page quantity buttons 4 and 7, turn ON the main switch.	Copy quantity setting button Main switch
2	Press “090” by means of the copy quantity setting button.	Copy quantity setting button
3	Press a copy button.	Copy button
4	Input a start date by means of the copy quantity setting button.	Copy quantity setting button
5	Press a copy button.	Copy button

[3] Setting the Density Shift

1. Setting method

Step	Operation (display)	Operation point
1	While pressing the P button, press the copy quantity setting button 3.	P button Copy quantity setting button
2	Confirm the density shift display (1 to 5) on the message display (see *1).	
3	Select a mode by means of a character/photograph button.	Character/photograph button
4	Input a density shift number which is requested to change by means of the copy quantity setting button	Copy quantity setting button
5	Press F1 in the menu selection button.	Menu selection button

*1: Relation between the copy quantity setting button and the density shift.

Copy quantity setting button	Density shift
1	Shift to darker 1
2	Shift to darker 2
3	Standard
4	Shift to lighter 2
5	Shift to lighter 1

[4] Confirmation and Resetting of the Drum Count

1. Confirmation method

Step	Operation (display)	Operation point
1	While pressing the P button, press the copy quantity setting button 7.	P button Copy quantity setting button
2	Confirm the PM count by means of a message display.	

2. Resetting method

Step	Operation (display)	Operation point
1	While pressing the page quantity buttons 4 and 7, turn ON the main switch.	Copy quantity setting button Main switch
2	Press “091” by means of the copy quantity setting button.	Copy quantity setting button
3	Press a copy button.	Copy button
4	Input a start date by means of the copy quantity setting button.	Copy quantity setting button
5	Press a copy button.	Copy button

[5] Function to Control Data

In order to utilize data control function, it is necessary to register a master key code in advance. Items capable of being confirmed or installed due to this function are different depending upon installed data in P05, P25 and P52 address in 25 mode.

1. Data control function item

Hereunder, relations between installed data in P05, P25 and P52 address in 25 mode and control item number.

	Address No.	Setting data			
25 Mode	P05	0	0	0	0
	P25	0	1	2	2
	P52	0	0	0	8
Control item No.	1	—	—	[Setting copy quantity limit for each spare parts] Procedure ③ Data list *3	[Setting copy quantity limit for each spare parts] Procedure ③ Data list *3
	2	—	—	[Calling copy count limit number for each spare part] Procedure ④ Data list *3.	[Calling copy count limit number for each spare part] Procedure ④ Data list *3.
	3	—	—	[Copy quantity count reset for each spare part] Procedure ⑤ Data list *3.	[Copy quantity count reset for each spare part] Procedure ⑤ Data list *3.
	4	[Calling copy count for each size] Procedure ① Data list *1.	[Calling copy count for each size] Procedure ① Data list *1.	[ADF/RDH paper feeding number counting] Procedure ⑥ Data list *4.	[ADF/RDH paper feeding number counting] Procedure ⑥ Data list *4.
	5	—	[Copy count reset for each size] •All reset •Individual reset Procedure ② Data list *2.	[Jamming frequency counting for each causing point] Procedure ⑦ Data list *5.	[Jamming frequency counting for each causing point] Procedure ⑦ Data list *5.
	7	—	—	—	[Counting copy quantity for each mode used] Procedure ⑧ Data list *6.
	8	—	—	—	[Counting the number of SC occurrence] Procedure ⑨ Data list *7.

*

△C *

P05 = 0:EKC is not selected
1:Select the EKC(No stop in limit)
2:Select the EKC(Stop after copy opetation)
3:Select the EKC(Stop immediately)

PS25= 0:Ptotection
1:Cancel copy control protection
2:Cancel service control protection

PS52= 0:No function
1:Cancel protection

2. Operation procedure

Step	Operation (display)	Operation point
1	While pressing the P button, press the copy quantity setting button 9.	P button Copy quantity setting button
2	Input a master key code (8 digits).	Copy quantity setting button
3	Input a control item No. (*)	Copy quantity setting button
4	Press the copy button. (*)	Copy button
5	(*) In the case of Procedure① ④ ⑥ ⑦ ⑧ and ⑨	
5-1	Select an item.	Reduction/magnification button
	In the case of Procedure⑤	
5-1	Select a counter number.	Reduction/magnification button
5-2	Press the copy button.	Copy button
	In the case of Procedure③	
5-1	Select an item.	Reduction/magnification button
5-2	Set limit number.	Copy quantity setting button
5-3	Press the copy button.	Copy button
	In the case of Procedure② (All reset)	
5-1	Press the copy button.	Copy button
	In the case of Procedure②(Individual reset)	
5-1	Press the stop/clear button.	Stop/Clear button
5-2	Select a counter number.	Reduction/Magnification button
5-3	Press the copy button.	Copy button
6	Press the stop/clear button. (*)	Stop/Clear button
7	While pressing the P button, press the stop/clear button and return to the normal mode.	P button Stop/Clear button

* : Repeat procedures 3 through 6 if necessary.

Data List * 1 Calling copy count for each size

No.	Paper size
1	—
2	A3
3	B4
4	A4
5	B5
6	A5
7	B6
8	8.5" × 14"
9	8.5" × 11"
10	By-pass feed

Data List * 2 Copy count reset (individual reset) for each size

No.	Paper size
1	—
2	A3
3	B4
4	A4
5	B5
6	A5
7	B6
8	8.5" × 14"
9	8.5" × 11"
10	By-pass feed

Data List * 3 Copy quantity limit setting for each spare part
Copy quantity count calling for each spare part
Copy quantity count resetting for each spare part

No.	Paper size
1~20	Counting copy frequency.
21	Counting frequency of manual paper feeding copy.
22	Counting frequency of the main body upper step paper feeding.
23	Counting frequency of the main body lower step paper feeding.
24	Counting frequency of the LCT upper step paper feeding.
25	Counting frequency of the LCT lower step paper feeding.
26	Counting copy frequency of the ADU paper feeding.
27	Counting copy frequency of the main body paper ejecting.
28~30	Counting frequency of ADU paper feeding.

Data List * 4 Counting the number of ADF paper feeding

No.	Paper feed mode
1	ADF/RDH
2	RADF/RRDH
3	—
4	—

Data List * 5 Counting the frequency of jamming for each causing point

No.	Jamming
1	J10
2	J11
3	J12
4	J13
5	J14
6	-
7	J16
8	J17
9	J19
10	J21
11	J31
12	J32
13	J61
14	J62
15	J63
16	J72
17	J75
18	J92
19	J93
20	J94
21	J11-1
22	J11-2
23	J11-3
24	J11-4

No.	Jamming
25	J12-1
26	J12-2
27	J12-3
28	J12-4
29	J13-1
30	J13-2
31	J13-3
32	J13-4
33	J14-1
34	J14-2
35	J14-3
36	J14-4
37	J30
38	J74
39	J95
40	J96
41	J10-2
42	J10-4
43	J17-1
44	J17-2
45	J17-3
46	J17-4
47	J17-5
48	J17-6

Note: The same codes apper on different area.
(ex:J11 and J11-1 to 4)

Data List * 6 **Counting copying number for each mode used**

No.	Copy mode
1	Copy quantity in “one side→one side” mode.
2	Copy quantity in “one side→both side” mode.
3	Copy quantity in “both sides→one side” mode.
4	Copy quantity in “both sides→both side” mode.
5	Copy quantity from one side to one side when using the ADF.
6	Copy quantity from one side to both sides when using the ADF.
7	Copy quantity in a staple sort mode.
8	Copy quantity in a sort mode.
9	Copy quantity in a group mode.
10	Frequency of staple.
11	Copy quantity in the same magnification.
12	Copy quantity in a fixed magnification of 1.41/2.00.
13	Copy quantity in a fixed magnification of 1.22/1.55.
14	Copy quantity in a fixed magnification of 1.15/1.29.
15	Copy quantity in a fixed magnification of 0.86/0.77.
16	Copy quantity in a fixed magnification of 0.82/0.65.
17	Copy quantity in a fixed magnification of 0.71/0.50.
18	Copy quantity in an arbitrary magnification.
19	Copy quantity in a zoom magnification.
20	Copy quantity in the maximum magnification of 2.00.
21	Copy quantity in the minimum magnification of 0.50.
22	Copy quantity in the AMS mode.
23	Copy quantity in the APS mode.
24	Copy quantity in the EE mode.
25	Copy quantity in the interruption mode.
26	Copy quantity in the manual feeding mode.
27	Copy quantity in the page continuous copying mode.
28	Copy quantity in the frame erasure mode.
29	Copy quantity in the folding erasure mode.
30	Copy quantity in the same magnification image shift mode.
31	Copy quantity in the reduction magnification image shift mode.
32	Copy quantity in a thick paper mode.
33	Copy quantity in a thin paper mode.
34	Copy quantity in an inter-sheet 1.
35	Copy quantity in an inter-sheet 2.
36	Copy quantity in an OHP mode.
37	Copy quantity in a mixed mode.
38	Reading frequency of a job memory.
39	Frequency of utilizing a pre-heating mode.
40	Copy start frequency when a set quantity is 1.
41	Copy start frequency when a set quantity is 2 to 5.
42	Copy start frequency when a set quantity is 6 to 10.
43	Copy start frequency when a set quantity is 11 or more.
44	Copy start frequency in inter-sheet 1.
45	Copy start frequency in inter-sheet 2.

No.	Copy mode
46	Copy quantity in an photographic mode.
47	Quantity of paper feeding in a DF thick paper.
48	Frequency of using a lengthwise/widthwise magnification change mode.
49	Frequency of using a book memory.
50	Frequency of using a single step.
51 52	Frequency of using a character/photograph mode. Frequency of using a character mode.
53	Frequency of using an arbitrary density.
54	Frequency of using an OHP mode 2.
55	Frequency of using an intersheet 3.
56	Frequency of using an intersheet 4.
57	Frequency of using an inserted page.
58	Frequency of using a chapter control.
59	Frequency of using a compound copy.
60	Frequency of using a repeat copy
61	Frequency of using a black and white reversing.
62	Frequency of using a outside document.

Data List * 7 **Counting frequency of the occurrence of SC**

No.	F/E code
1	F18-1
2	F18-2
3	F18-3
4	F18-4
5	F28-1
6	F28-2
7	F34-1
8	F34-2
9	F35-1
10	F35-2
11	F36-1
12	F36-2
13	-
14	-
15	-
16	F41-4
17	-
18	-
19	-
20	-
21	-
22	-
23	-
24	-
25	-
26	-
27	-
28	-
29	-
30	-
31	-
32	-
33	-
34	-
35	F22-1

No.	F/E code
36	F22-2
37	-
38	F28-3
39	F43-1
40	F43-2
41	F43-3
42	F43-4
43	-
44	-
45	-
46	-
47	-
48	-
49	F51-1
50	F51-2
51	F51-3
52	F51-4
53	F51-5
54	F51-6
55	F51-7
56	F51-8
57	F51-9
58	F52-1
59	F52-2
60	F52-3
61	F52-4
62	F52-5
63	F52-6
64	F52-7
65	-
66	-
67	-
68	-
69	-
70	-

47 MODE AND MULTI MODE

[1] Method of Setting the 47 Mode

1. 47 Mode

This machine is provided with a 47 mode (Input/Output check function) as a self diagnosis function and various adjustments are possible in this mode.

- **Setting method**

Step	Operation	Remarks (status)
1	While pressing the copy quantity buttons 4 and 7, turn ON the main switch.	Selecting Mode 47.
2	Input an address No. by means of the copy quantity button.	Address number is lit. Check inputting by means of H and L display.
3	Press a copy button so that let move various loads.	Output check.
4	Press the stop/clear button so that stop the movement of the load.	Output stop.
5	Press a P button. (*1)	Flickering of data display.
6	Input modified data by means of the copy quantity setting button. (*1)	Flickering of the inputted data, modification of data is completed.
7	Press the P button. (*1)	Flickering of the data display.
8	Turn the main switch from OFF to ON.	Return to the normal mode.

*1: Procedures 5 to 7 are effective only for address numbers wherein data can be modified.

2. Multi Mode

A Multi mode is provided in the 47 mode function of this machine.

Multiple input/output checks are possible with one I/O check code.

- An M mark is indicated in the Multi Code column of the I/O Check Code list after the functions that the multi mode can use.

- **Setting method**

a. Set to the 47 mode.
b. Enter the object I/O check code (those with multi mode functions) with the copy quantity setting button.
c. Press the P button.
d. The standard mode of the multi mode flashes in the copy quantity display section.
e. Enter the object multi mode No. (see Multi Mode list) with the copy quantity setting button.
f. The multi mode No. displayed in the copy quantity display section flashes.
g. Press P button (indication changes to 47 mode's).
h. Carry out in the same manner as I/O check of the 47 mode after setting the multi mode.
    (1) Input check
    The input signal level preset in the multi mode is displayed as [Hi] or [Lo] on the magnification display section.
    (2) Output check
    Pressing the Copy button causes the copier to operate with load preset in the multi mode, whereas pressing the Stop/Clear button stops this operation.
i. The 47 multi mode will be cleared when the main switch is set to OFF.

[2] Charging Corona Current Adjustment

(Not applicable in field)

[3] Transfer Current Adjustment

(Not applicable in field)

[4] Separation (AC) Current Adjustment

(Not applicable in field)

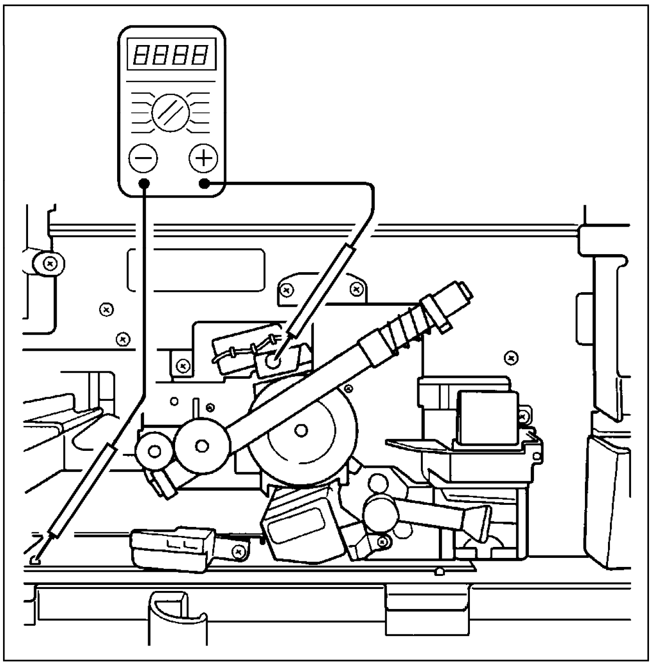
[5] Separation (DC) Current Adjustment

(Not applicable in field)

[6] Charging Grid Voltage Adjustment

1. Setting method

Step	Operation (display)	Operation point
1	Check the standerd value of the grid voltage written at the drum frange.	
2	Connect the tester as shown below. + →Grid pin - →GND(Earth) Range →DC1000V	
3	While pressing the page quantity buttons 4 and 7, turn ON the main switch.	Copy quantity setting button Main switch
4	Press "007" by means of the copy quantity setting button. Confirm that the copy quantity display portion displays "7".	Copy quantity setting button
5	Press the copy button and check the tester value. Then, stop by the stop button. If the adjustment is necessary, comply with the following procedure.	Copy button stop button
6	Press P button.	P button
7	On the copy quantity display portion, the level of the existing installed value is flickered. Variable range for the installed value : 0 ~ 255 Standard value (targeted) : 137 Variable amount by one step : about 1.6 µA	
8	Input an installed value which is requested to be modified by means of the copy quantity setting button.	Copy quantity setting button
9	Press a P button.	P button
10	Repeat the step from 5 to 9 until the adjustment completes.	



[7] Developing Bais Adjustment

(Not applicable in field)

[8] Test Pattern Density Adjustment

1. Setting method

Step	Operation (display)	Operation point
1	While pressing the page quantity buttons 4 and 7, turn ON the main switch.	Copy quantity setting button Main switch
2	Press “013” by means of the copy quantity setting button. Confirm that the copy quantity display portion displays “13”.	Copy quantity setting button
3	Press a P button.	P button
4	On the copy quantity display portion, the level of the existing installed value is flickered. Variable range for the installed value : 0 ~ 255 Note: The adjustment is density set of test pattern for Overall halftone (35-01 mode). The density have three position for 0, 70 and 255.	
5	Input an installed value which is requested to be modified by means of the copy quantity setting button.	Copy quantity setting button
6	Press a P button.	P button

Note: After completing test pattern output, restore the value to 255.

[9] Initial Setting

- Each adjustment data is totally returned to the data value when the machine is delivered from a factory.

1. Setting method

Step	Operation (display)	Operation point
1	While pressing the page quantity buttons 4 and 7, turn ON the main switch.	Copy quantity setting button Main switch
2	Press “093” by means of the copy quantity setting button. Confirm that the copy quantity display portion displays “93”.	Copy quantity setting button
3	Press a copy button.	Copy button

[10] Adjustment Mode List

- It can grasp all adjustment modes of the machine.
- However, adjustment (change of data value) due to this mode cannot be conducted.

1. Setting method

Step	Operation (display)	Operation point
1	While pressing the page quantity buttons 4 and 7, turn ON the main switch.	Copy quantity setting button Main switch
2	Press "094" by means of the copy quantity setting button. Confirm that the copy quantity display portion displays "94".	Copy quantity setting button
3	Press a copy button. An item and data are displayed on the message display.	Copy button
4	Due to a reduction/magnification button (∇/Δ), an item displayed is shifted one by one (*1).	Reduction/magnification button

*1: See [15] list of adjustment modes (pp. 5 -20) for the content displayed.

[11] L Detection Adjustment

- It adjusts automatically by sensing toner density.
- Conduct this adjustment in installing the main body and replacing a developing agent.

Note: If developer that is being used is adjusted, the toner density of the developer in use will become the reference, resulting in an incorrect adjustment value.

1. Setting method

Step	Operation (display)	Operation point
1	While pressing the page quantity buttons 4 and 7, turn ON the main switch.	Copy quantity setting button Main switch
2	Press "095" by means of the copy quantity setting button. Confirm that the copy quantity display portion displays "95".	Copy quantity setting button
3	Press a copy button. • A stirring screw in a developing unit rotates, and L sensing sensor is automatically read. • After about 5 minutes, sensing automatically stops. [ADJ OK] is displayed on the message display in the operation unit.	Copy button

[12] Telephone Number Setting

- The setting is registration for telephone number. The telephone number is displayed on the message display for generation service call.

1. Setting method

Step	Operation (display)	Operation point
1	While pressing the page quantity buttons 4 and 7, turn ON the main switch.	Copy quantity setting button Main switch
2	Press “180” by means of the copy quantity setting button.	Copy quantity setting button
3	Press a copy button. Hereunder, that is displayed on the message display in the operation unit. TEL NO. XXX-XXX-XXXX	Copy button
4	Press “Telephone Number” by means of the copy quantity setting button. *"-"appears by pressing P button	Copy quantity setting button Copy button
5	Press a set/F1 button.	Set/F1 button
6	Press a stop/clear button.	Stop/Clear button

[13] Input Check List

Classification	Code	Symbol	Multi mode	Name		State of display and signal source	
						H	L
Analog signal	000	DCPS2		CVR FB signal		Normal	Abnormal
	001	TLD		Toner level detecting signal △		Enough toner	Less toner △
	002			Internal temperature detecting signal		△ *	△ *
	003	TH1		TH1 signal		△ *	△ *
	004	TH2		TH2 signal		△ *	△ *
	005			Humidity sensor signal		△ *	△ *
	006						
△	007	TCSB		Dmax MONI signal		△ *	△ *
	008	TCSB		Dmax signal		△ *	△ *
	009	TCSB		Drum jamming signal		△ *	△ *
Paper feed	010	PS12,13,15, 141,140	M	No-paper detecting signal	<Contents of M> △ -Common to 10, 12,16 and 19- 1: Resist PS 2: No feed PS 3: LCT right 4: LCT left -Only to 10- 5: By-pass feed	No paper OFF	Paper ON
	012	PS16,17, 143,142	M	Tray upper limit detecting			
	016		M	Paper size signal <Display for each paper size> A3:7, B4:6, A4R:8, A4:5, B5R:C, B5:1, B6:9			
△	019	PS20,21,210, 200	M	Pre-try detecting		OFF	ON
Paper feed and conveyance	020	△ PS14 PS18 PS19 PS401 PS407	M	Paper feed sensor signal △ 1: Resist PS △ 2: No feed PS 3: Optical synchronization sensor △ 4: LCT pass detect sensor △ 5: LCT feed detect sensor		OFF	ON
	022	PS25		Paper exit sensor signal		ON	OFF
	023	△ PS11 PS160 PS158 PS24	M	Interlock signals 1: Right side plate 2: LCT right side plate 3: Left side plate 4: Sensing whether or not the fixing lever is closed		OFF	ON
Optics	030	△ PS7 PS3 PS5 PS4 PS45 PS2 PS1	M	Optics sensor signals 1: OPT TMG 2: Shading 3: Return 4: Resist 5: APS timing 2 6: Center sensor 7: Over run		OFF	ON
Main body	048		M	Main body ROM version 1: C1 ROM 2: C2 ROM 3: C3 ROM 4: C4 ROM			
	049		M	Processing ROM version 1: I1 ROM 2: I2 ROM			

Classification	Code	Symbol	Multi mode	Name	State of display and signal source	
					H	L
Peculiar function	050		M	Checking whether or not a connector is connected 1: A/D board connection (CN420) 2: LD1 board connection (CN421) 3: LD2 board connection (CN422) 4: INDEX board connection (CN423) 5: Sub scanning correction motor connection (CN424) 6: Scanner I/F board connection (CN426) 7: CFF I/F board connection (CN427) 8: Electronic RDH board connection (CN428) 9: Printer I/F board connection (CN429)	Connect	Not-connect
ADF and RADF	060	MS301 MS302	M	Interlock signals 1: ADF open/close interlock 2: Reversal portion interlock	OPEN	CLOSE
	064	MS302	M	DF306 1: No paper detecting	PAPER	NO PAPER
	069		M	Signal for connect ADF 1: DF306	ADF	NO ADF
Sorter and Finisher	079		M	Signal for connect Finisher 1: FS-102	FS	NO FS
ADU	080	PS158		Interlock signal	OFF	ON
	082	PS152 PS153 PS157 PS155 PS156 PS151	M	Paper detecting signal 1: ADU Paper feed 2: ADU reversal detection 3: ADU gate 4: ADU paper exit 2 5: ADU paper exit 3 6: ADU no paper	OFF	ON
	089			Signal for connect ADU	ON	OFF

[14] Output Check List

Classification	Code	Symbol	Multi mode	Name	Impossible to install/ change to write in the field △
Analog signal	000	L1		Exposure lamp	
	001	M10		Toner supply motor	
	002	HV1	M	Charging	
	003	HV2	M	Transfer	
	004	HV2	M	Separation (AC)	
	005	HV2		Transfer + Separation (AC + DC)	
	006	HV2	M	Separation (DC)	
	007	HV1	M	Grid	
	008			Dmax / γ LED	×
	009			JAM detecting LED	
	010	HV1		Guide plate	
	011	HV1	M	bias	
Temporary	012				
	013		M	Test pattern density	
	014			γ correction level adjustment	×
	015				
	016				
	017			L detecting reference data	×
	018			Dmax level adjustment	×
	019				
Paper feed	020		M	1st paper feed solenoid 1: Main body upper 2: Main body lower 3: LCT right (1000) 4: LCT left (1500) 5: By-pass feed	
	021		M	Paper feed motor 1: High speed in the main body (paper feeding speed in the main body) 2: Low speed in the main body (by-pass feeding speed) 3: LCT	
	022		M	1st paper feed clutch 1: Main body upper 2: Main body lower 3: LCT right (1000) 4: LCT left (1500) 5: By-pass feed	
	023				
	024	MC8		Intermediate conveyance clutch	
	025	MC3		2nd paper feed clutch	
	029	SD4		Separation claw solenoid	
Optics	030				
	031	M12		Optical return trip driving	
	032	M5		Polygon motor	
	033			Polygon motor + APC	
	034			Shading correction + AGC + AOC	
	035			Platen EE operation △	
	036	△	M	Laser 1 PWM	×
	037	△	M	Laser 2 PWM	×
	038			Correction of sub-scanning beam	×
	039				

Classification	Code	Symbol	Multi mode	Name	Impossible to install/ change to write in the market
Main body	040	M1		Main motor	×
	041	M4		Drum motor	
	042		M	Fan motor 1: Main fan 2: Optical fan 3: Suction fan 4: Image processing fan 5: Electronic RDH fan 6: ADU fan 7: Developing fan	
	043	C(T)		Total counter	
	044	M7,M8		Charge cleaning motor → Transfer/ Separation cleaning motor (continuous)	
	045	L2,L3	M	Fixing heater lamp 1: Thin paper mode 2: Standard mode 3: Thick paper mode	
	046	M7		Charge cleaning motor	
	047	M8		Transfer/Separation cleaning motor/separation cleaning motor	
	048			Operation unit (all are lit)	
	049			Buzzer	
Intrinsic function	050	M3		Setting the rotation number of the developing driving motor in 400 dpi	×
	051	PCL		PCL	
	052	△TSL		TSL △	
	053	M35		Developing screw motor	
	054	M10		Toner automatic replenishing (L detecting)	
	055			Message test	
	056	M7		Compulsory returning the charge cleaning motor	
	057	M8		Compulsory returning the transfer/separation cleaning motor	
RADF	060		M	Drive (DF306) 1: Conveyance belt (forward) 2: Conveyance belt (backward)	
	064		M	Switch (DF 306) 1: Paper feeding plate solenoid 2: Paper feeding solenoid 3: Reversing solenoid 4: Swing back solenoid 5: Speed reduction paper exiting solenoid	
	069		M	Test mode 1: One side document continuously 2: One side document one by one 3: Both side document continuously 4: Both side document one by one	
ADU	080	M151		ADU paper feed motor	
	084		M	ADU load 1: CW clutch 2: CCW clutch 3: Conveyance clutch 4: Longitudinal conveyance solenoid	
Adjustment process and others	090			PM counter clear	
	091		M	Process counter clear 1: Drum counter	
	092			Process initial setting (impossible to be used in the fild)	×
	093		M	Fild initial setting (data return in delivery from process)	
	094		M	Adjustment mode list display mode*	
	095			L-detecting reference value automatic adjustment (Developing counter reset)	
	096			Process delivery completing setting (Used in product line)	×
	097			Lighting adjustment 1: Mode 1 2: Mode 2	
	098			Data inputting about transcription and separated humidity	×
	099			Unvolatile reference mode	×

Classification	Code	Symbol	Multi mode	Name	Impossible to install/ change to write in the market
600dpi mode △C	103	HV2	△C	Transfer	×
	104	HV2		Separation (AC)	×
	106	HV2		Separation (DC)	×
	107	HV1		Grid	×
	111	HV1		Bias	×
	120			600dpi Non-volatile RAM data setting	
	136			Laser 1 PWM	×
	137			Laser 2 PWM	×
	140	M1		Main motor speed	×
	150	M3		Setting the rotation number of the developing driving motor in 600 dpi	
Special mode	160			Setting pass word of the weekly timer	△C
	180			Telephone number setting	×
	190			AGC setting	×
	191			AOC setting	×
	192			Setting a targeted value of white correction	×
	193			Setting a targeted value of black correction	△C ×
	197			Checking the SIMM volume of the electronic RDH	
	198			△C	△C
	199			Setting offset quantity for correcting sub-scanning slip	×

[15] Adjustment Mode List

Contents of adjustment	Contents of message		Data (referential value)		Impossible to be adjusted
	1st line	2nd line	Data from 47-92 mode	Range of data	
1. Charge current	CHARGE (1) ADJ	47-002+P	△ -	0~255	△ ×
2. Transfer current	TRANSFER (1) ADJ	47-003+P	△ -	0~255	△ ×
3. Separation (AC) current	SEPARAT (AC) (1) ADJ	47-004+P	△ -	0~255	△ ×
4. Separation (DC) current	SEPARAT (DC) (1) ADJ	47-006+P	△ -	0~255	△ ×
5. Grid voltage	GRID (1) ADJ	47-007+P	△ 145	0~255	
6. Developing bias	BIAS (1) ADJ	47-011+P	△ -	0~255	△ ×
7. Transfer current (600dpi)	TRANSFER (2) ADJ	47-103+P		0~255	△ ×
8. Separation (AC) current (600dpi)	SEPARAT (AC) (2) ADJ	47-104+P		0~255	×
9. Separation (DC) current (600dpi)	SEPARAT (DC) (2) ADJ	47-106+P		0~255	×
10. Grid voltage (600dpi)	GRID (2) ADJ	47-107+P	△ -	0~255	×
11. Developing bias (600dpi)	BIAS (2) ADJ	47-111+P	△ -	0~255	×
12. Adjusting Dmax level	Dmax ADJ	47-018+P	50	0~255	×
13. Laser 1 PWM (600dpi)	LD1 POWER (1)	47-036+P	92	0~99	×
14. Laser 2 PWM (600dpi)	LD2 POWER (1)	47-037+P	92	0~99	×
15. Laser 1 PWM (600dpi)	LD1 POWER (2)	47-136+P	△ -	0~99	×
16. Laser 2 PWM (600dpi)	LD2 POWER (2)	47-137+P	△ -	0~99	×
17. LD1 offset adjustment (400dpi)	LD1 OFFSET (1)	35-005+P+3	20	-64~+64	
18. LD2 offset adjustment (400dpi)	LD2 OFFSET (1)	35-005+P+4	20	-64~+64	
19. LD1 offset adjustment (600dpi)	LD1 OFFSET (2)	35-005+P+7	20	-64~+64	×
20. LD2 offset adjustment (600dpi)	LD2 OFFSET (2)	35-005+P+8	20	-64~+64	×
21. Separation claw ON	SEPARATOR CLAW ON	25-01+P	1	0~9	×
22. Separation claw OFF	SEPARATOR CLAW OFF	25-02+P	6	0~9	×
23. Adjustment one-sided	LD CENTERING (1) ADJ	36-097+P	0	-32~+32	
24. SGU adjustment one-sided (table)	LD CENTERING (2) ADJ	35-016+P △	0	-32~+32	

Contents of adjustment	Contents of message		Data (referential value)		Impossible to be adjusted
	1st line	2nd line	Data from 47-92 mode	Range of data	
25. A5R backside is one-sided	CENTERING (A5R) ADJ	△35-80(P+2)	0	-94~+99 (-99~+99)	△×
26. Front edge timing (Copy: first copy)	RESISTRATION (2)	36-091+P	△ +24	-100~+99 (-99~+99)	
27. Front edge timing (E-RDH: second copy)	RESISTRATION (1)	36-098+P	△ +29	-100~+99 (-99~+99)	
28. Front edge timing (printer)	RESISTRATION (3)	36-099+P	△ +51	-99~+99	
29. Erased amount of the front edge of document	IMAGE MISSING ADJ	36-092+P	△ +28	0~99	
30. Horizontal magnification adjustment	MAGNIFI (1) ADJ	36-093+P	△ -20	-20~+20	
31. SGU longitudinal magnification adjustment	MAGNIFI (2) ADJ	35-016+P+2	16	-1~31	
32. Adjustment of loop amount of paper feeding (Tray)	LOOP ADJUST (TRAY)	36-094+P	△ +10	-20~+90	
33. Adjustment of loop amount of paper feeding (By-pass)	LOOP ADJUST (BYPASS)	36-094+P	△ +60	-20~+90	
34. Adjustment of optical brake amount	BREAK ADJUST	36-096+P	7	0~9 (-9~+9)	
35. Rotation number of developing motor	DEVELOPING MOTOR (1)	47-050+P	△ -	1~32	×
36. Rotation number of developing motor (600dpi)	DEVELOPING MOTOR (2)	△ 47-150+P	△ -	1~32	×
37. Absolute position of laser 1	LD1 POSITION	△ -	△ 00998		△×
38. Absolute position of laser 2	LD2 POSITION		△ 01060		×
39. Sub-scanning slip amount	VERTICAL SHIFT	35-80+P+5	△ 62		×
40. Main-scanning slip amount	HORIZONTAL SHIFT	35-80+P+5	△ 00524		×
41. AOC1 data	AOC CH1 Vol.	△ -	△ 68		×
42. AOC2 data	AOC CH2 Vol.	△ -	△ 84		×
43. AGC1 data	AGC CH1 Vol.		△ 44		×
44. AGC2 data	AGC CH2 Vol.		△ 45		×
45. Copy quantity in tray-1	TRAY-1	-	0	0~999999	
46. Copy quantity in tray-2	TRAY-2	-	0	0~999999	
47. Copy quantity in tray-3	TRAY-3	-	0	0~999999	
48. Copy quantity in tray-4	TRAY-4	-	0	0~999999	

Contents of adjustment	Contents of message		Data (referential value)		Impossible to be adjusted
	1st line	2nd line	Data from 47-92 mode	Range of data	
49. By-pass feed copy quantity	COPY COUNT(BYPASS)	-	0	0~999999	
50. ADU copy quantity	COPY COUNT(ADU)	-	0	0~999999	
51. Dmax error (1)	D-MAX ERROR(1)	-	0	0~255	
52. Dmax error (2)	D-MAX ERROR(2)	-	0	0~255	
53. Dmax error (3)	D-MAX ERROR(3)	-	0	0~255	
54. Gamma error (1)	GAMMA ERROR(1)	-	0	0~255	
55. Gamma error (2)	GAMMA ERROR(2)	-	0	0~255	

25 MODE

This machine is provided with the 25 mode as an adjusting method to enable various adjustments.

[1] Settng Method

Step	Operation	Remarks (status)
1	While pressing the page quantity buttons 2 and 5, turn ON the main switch.	Selecting Mode 25.
2	Due to a reduction/magnification button (∇/Δ), select an address No. Or, directly input by the following procedure.	Address number is lit.
2-1	Press a P button. (*1)	
2-2	By means of the copy quantity setting button, input the address No. (*1)	
2-3	Press a P button. (*1)	
3	Input modified data by means of the copy quantity setting button.	Data modification.
4	Press a copy button.	Data modification is completed.
5	Turn the main switch from OFF to ON.	Return to the normal mode.

*1: Address No. is possible to be directly inputted by means of procedures 2-1 through 2-3.

[2] E. K. C. Select

Select an E.K.C. mode and set behavior in limit.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P05.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: E.K.C. is not selected. 1: Select the E.K.C. (No stop in limit.) 3: Select the E.K.C. (Stop after copy in limit.) 5: Select the E.K.C. (Immediate stop in limit.)	Copy quantity setting button
4	Press a copy button.	Copy button

[3] FS-103 Sub-tray Select (Printer)

Set if FS-103 sub-tray is used and paper exit direction.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P07.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: Sub-tray is not used. 2: Sub-tray is used. (Reverse paper exit) 3: Sub-tray is used. (Normal paper exit)	Copy quantity setting button
4	Turn ON the copy button.	Copy button

[4] ATS Select

Set objective trays for ATS.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P08.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: ATS is not conducted. 1: ATS is possible for all steps. 2: ATS is not possible only for the upper step.	Copy quantity setting button
4	Press a copy button.	Copy button

[5] F4 Size Select

Select F4 size paper.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P10.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: 8.5×13 1: 8.25×13 2: 8.125×13.25 3: 8×13	Copy quantity setting button
4	Press a copy button.	Copy button

△1 [6] FS-103 Original Quantity Over Control

Set the operation used when the original quantity exceeds the specified limit.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P11.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0~9 (*1)	Copy quantity setting button
4	Turn ON the copy button.	Copy button

*1

Data	Modification
0	Stops immediately (at max.50 sheets)
1	Stops immediately (at max.45 sheets)
2	Stops immediately (at max.40 sheets)
3	Stops immediately (at max.35 sheets)
4	Stops immediately (at max.50 sheets)
5	Stop when current set of copy completes. (every 50 sheets)
6	Stop when current set of copy completes. (every 45 sheets)
7	Stop when current set of copy completes. (every 40 sheets)
8	Stop when current set of copy completes. (every 35 sheets)
9	Stop when current set of copy completes. (every 50 sheets)

[7] Temperature Select in the Pre-heat Mode

Select fixing temperature in the pre-heat mode.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P12.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: 160°C 1: 170°C 2: 180°C	Copy quantity setting button
4	Press a copy button.	Copy button

[8] Message Language Select

Select message language on operation unit.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P14.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: English 1: French 2: German 3: Italian	Copy quantity setting button
4	Press a copy button.	Copy button

[9] Priority of the Paper Size

Set the most priority paper size selected when auto-function operates. (When APS released)

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P16.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: A3 5: F4 1: A4 6: B5R 2: A4R 7: B5 3: A5 8: B4 4: OTHERS	Copy quantity setting button
4	Press a copy button.	Copy button

[10] Jumping Selection of the Paper Size

Select the most preferred paper size in temporary.
(Select by using P+cassette size button)

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P17.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: A3 5: F4 1: A4 6: B5R 2: A4R 7: B5 3: A5 8: B4 4: OTHERS	Copy quantity setting button
4	Press a copy button.	Copy button

[11] Shut-off Time Selection in the Pre-heat Mode

Select shut-off time in the pre-heat mode.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P19.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0~3: 1 hour 4~6: 2 hour 7~9: 3 hour	Copy quantity setting button
4	Press a copy button.	Copy button

[12] FS-102/103 Overload Control Select

Set the operation for an overload when a finisher is used.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P20.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modifies data <FS-102> 0:Not control overload 5:Stops when paper quantity exceeds the specification or more than 25 copies are stapled. <FS-103> 0-9 (refer to *1)	Copy quantity setting button
4	Turn ON the copy button.	Copy button

*1

Operation \ Data	0~3 6~9	4	5
Performing lower limit detection by PS3(Tray lower limit)	●	●	●
Detecting PS7(Staple paper exit upper limit) abnormal ON by exiting paper(More than 1sec)	–	●	●
Detecting PS2(tray upper limit) abnormal ON by exiting paper.	–	●	●
Stop at predetermined number of copies.(*2)	–	–	●

*2

Non-staple mode
Group mode
Offset mode

Paper size	capacity (the number of sheets)
B6R,A5R,5.5×8.5R	500
B5R,B5,A4R,A4 8.5×11R,8.5×11	2,000
B4R,F4R,A3R 8.5×14R,11×17R	1,500

Staple mode

The number of sheets	A3, 11x17 excluded		A3, 11x17	
	2 staple places	1 staple place	2 staple place	1 staple place
2~9	100 sets	100 sets	50 sets	100 sets
10~20	50 sets	50 sets	15 sets	20 sets
21~30	30 sets	30 sets	30 sets	30 sets
31~40	25 sets	25 sets	25 sets	25 sets
41~50	20 sets	20 sets	20 sets	20 sets

[13] Setting Intermittent Time for Running Test

In order to conduct intermittent copy in running test mode in Mode 36, set waiting time.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate address of waiting time. P22: 3rd digit (10^2) P23: 2nd digit (10^1) P24: 1st digit (10^0)	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Input waiting time . (1 second to 255 seconds)	Copy quantity setting button
4	Press a copy button.	Copy button

* Waiting time is possible to be set in a range from 1 second to 255 seconds.
When more than 255 is inputted, 255 seconds is automatically set.

* Addresses P22, P23 and P24 respectively input data by means of procedure 2 to 4.

[14] Data Control System Selection

Set the protect for copy control and service control operator mode.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P25.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: Protect 1: Cancel copy control protect 2: Cancel service control protect	Copy quantity setting button
4	Press a copy button.	Copy button

[15] ADF Frame Erasing Selection

Set frame erasing of ADF.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P26.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: No 5: Yes	Copy quantity setting button
4	Press a copy button.	Copy button

[16] PM Cycle Setting

Set a cycle for displaying PM's status.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate address of waiting time. P27: 5th digit (10^4) P28: 4th digit (10^3) P29: 3rd digit (10^2)	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Input PM cycle .	Copy quantity setting button
4	Press a copy button.	Copy button

* Addresses P27, P28 and P29 respectively input data by means of Procedure 2 to 4.

[17] Original Image Shift Setting

A margin for stapling can be set on front/back sides.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P31.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. C *See the table below.	Copy quantity setting button
4	Press a copy button.	Copy button

*

Data	1-2 mode	2-1 mode	Shift on a reverse side
0	Original has a margin	Original has a margin	Deletes a right margin on copying paper
1	Original has a margin	Original has no margin	
2	Original has no margin	Original has a margin	
3	Original has no margin	Original has no margin	
4	Original has a margin	Original has a margin	Shifts copying paper to the left
5	Original has a margin	Original has no margin	
6	Original has no margin	Original has a margin	
7	Original has no margin	Original has no margin	

Both 1-1 and 2-2 modes treat all originals as no margin.

Margins on copying paper are set as follows based on the above specifications.

Data	1-1 mode	1-2 mode	2-1 mode	2-2 mode
0	Shifts paper to the right	Shifts a backside to the left	Shifts even pages to the right	Shifts a front side to the right Deletes a right margin on a backside
1	- ditto -	Shifts a backside to the left	Shifts paper to the right	- ditto -
2	- ditto -	Shifts a front side to the right Deletes a right margin on a backside	Shifts even pages to the right	- ditto -
3	- ditto -	Shifts a front side to the right Deletes a right margin on a backside	Shifts paper to the right	- ditto -
4	- ditto -	Shifts a backside to the left	Shifts even pages to the right	Shifts a front side to the right Shifts a backside to the left
5	- ditto -	Shifts a backside to the left	Shifts paper to the right	- ditto -
6	- ditto -	Shifts a front side to the right Shifts a backside to the left	Shifts even pages to the right	- ditto -
7	- ditto -	Shifts a front side to the right Shifts a backside to the left	Shifts paper to the right	- ditto -

[18] Finisher Initial Mode Setting

Set a priority mode in selecting a sorter.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P46.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: Non-sorter priority △ 1: Sort is preferred 2: Group is preferred	Copy quantity setting button
4	Press a copy button.	Copy button

[19] Setting Cancellation of Fixing Abnormality

Cancel fixing abnormality [F34], [F35] and [F36].

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P47.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Input 0 to data.	Copy quantity setting button
4	Press a copy button.	Copy button

[20] Auto Reset Time

Set time until returning to an automatic status after manual operation.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P48.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: No △ 1: 1.5 minute 2: 1.5 minutes	Copy quantity setting button
4	Press a copy button.	Copy button

[21] Selection of fixing Control During Automatic Shut Off

When automatic shut off is conducted, set whether or not control related to fixing will be continued.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P49.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: No 1: Yes	Copy quantity setting button
4	Press a copy button.	Copy button

[22] A3 Copy 2 Counts Setting

Set how to proceed copy count for A3 paper.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P50.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: 1 count 1: 2 counts	Copy quantity setting button
4	Press a copy button.	Copy button

* When 2 counts is set, conduct 2 counts the total counter, the key counter, the PM counter and the drum counter concurrently.

[23] Data Control Function Select

Set protection of the service control operator mode.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P52.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: No function 8: Cancel protection	Copy quantity setting button
4	Press a copy button.	Copy button

[24] Setting Auto Button Function and Auto Condition when Setting ADF Original

Set automatic functions when an automatic button is pressed and when an original is set in ADF.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P56.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0 to 3 (see *1)	Copy quantity setting button
4	Press a copy button.	Copy button

*1: Automatic button function and ADF original setting indication.

Data	Automatic button function	ADF original setting indication
0	Full auto	ADF select
1	△*Manual select	ADF select
2	Full auto	Full auto
3	△*Manual select	△*Manual select

△*Selectable by 25 mode P58

[25] Setting of operation When the Key Counter is Pulled out

Set behavior when the key counter is removed in copying.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P57.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: Exit a paper in copying and stop operation. 5: Stop operation immediately.	Copy quantity setting button
4	Press a copy button.	Copy button

[26] Switching Auto/Manual Priority

Set combination of individual selection when the automatic button is pressed.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P58.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0 to 7 (see *1)	Copy quantity setting button
4	Press a copy button.	Copy button

*1: Combination of individual selection.

Data	ADF select	APS select	EE select
0	ADF	APS	EE
1	Platen	APS	EE
2	ADF	△ *Manual	EE
3	Platen	△ *Manual	EE
4	ADF	APS	Manual
5	Platen	APS	Manual
6	ADF	△ *Manual	Manual
7	Platen	△ *Manual	Manual

△ *APS is selected only for USA machine.

[27] Switching the contents of Normal/Fine

Set the combination of bit number when the image reading button is turned ON.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P60.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: 1ED+2ED 1: 1ED+4ED 2: 2ED+4ED	Copy quantity setting button
4	Press a copy button.	Copy button

△ *ED: Error Diffusion

Note: Default selection of reading mode(normal/fine/S-fine)

25mode,P59
0:Normal(default)
1:Fine
2:S-fine

[28] Selecting the Erasing Amount of the Leading Edge in ADF Mode

Set the erasing amount of the edge in ADF mode.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P61.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: 2mm 1: 3mm 2: 4mm 3: 5mm	Copy quantity setting button
4	Press a copy button.	Copy button

[29] Setting of Auto Shut Off and Auto Pre-heating

Set auto shut off and auto pre-heating time.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P62.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: No function Auto shut off 1: 2 minutes 2: 6 minutes 3: 10 minutes Auto pre-heating 4: 2 minutes 5: 6 minutes 6: 10 minutes	Copy quantity setting button
4	Press a copy button.	Copy button

[30] Setting Paper Size for Trays 2, 3 and 4

Set paper size for Trays 2, 3 and 4.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate address of waiting time. P67: Tray 2 P68: Tray 3 P69: Tray 4	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0 to 9 (see *1)	Copy quantity setting button
4	Press a copy button.	Copy button

*1: Size correspondence list.

Data	Paper size	Data	Paper size
0	A3	5	B5
1	B4	6	A5
2	A4R	7	F4
3	B5R	8	-
4	A4	9	-

[31] Selecting Outside Erasing the Original

Set whether or not space outside the original is erased.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P70.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: Erase outside the original. 1: Entire image in the platen mode. △ 2: Transfer paper prior any time	Copy quantity setting button
4	Press a copy button.	Copy button

△ * When data "1" is selected, whole image determined by the selected paper size is copied only in case of platen copy.

[32] Toner Level Detecting Select

Set display timing of toner replenishing.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P71.	Magnification/ reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: After copying 100 sheets. 1~3: After copying 1000 to 3000 sheets.	Copy quantity setting button
4	Press a copy button.	Copy button

[33] Master Key Code Setting

Set the master key code for entering into the E.K.C. operator mode and the data control system operator mode.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P72 to P79.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. Input the master key code into P72 (the upper rank) to P79 (the lower rank).	Copy quantity setting button
4	Press a copy button.	Copy button

* With regard to addresses P72 to P79, input each data by means of procedures 2 to 4.

[34] Switching Longitudinal Line Paper/ Transversal Line Paper

Set separation conditions depending upon the kind of small size paper.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P88.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: All transversal line. 1: Transversal line only A4,B5 and by-pass.	Copy quantity setting button
4	Press a copy button.	Copy button

[35] Selecting Preliminary rotation of Polygon Motor

Set preliminary rotation of polygon motor in idling.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P90.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: Not preliminary rotation 1: Preliminary rotation is 14000 rpm 2: Preliminary rotation is 11024 rpm 3: Preliminary rotation is 8000 rpm 4: Stop	Copy quantity setting button
4	Press a copy button.	Copy button

[36] Selecting the Timing of Polygon Motor Low Speed Rotation

Set time until the polygon motor is changed to low speed rotation after copying finishes.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P91.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: 15 seconds 1: 30 seconds 2: 60 seconds 3: 120 seconds	Copy quantity setting button
4	Press a copy button.	Copy button

[37] Selecting Automatic Outside Erasing the Original

Set how to erase in using the erasing outside the original mode.

Step	Operation (display)	Operation point
1	Set to the 25 mode.	Copy quantity setting button Main switch
2	Designate Address P92.	Magnification/reduction button or the P button + the copy quantity setting button.
3	Modify data. 0: Rectangular 1: Corresponding oblique original	Copy quantity setting button
4	Press a copy button.	Copy button

## [38] 25 Mode Address Map

Address	Item	Setting range	Initialvalue	Change details	Remarks
00					
01	Data for adjusting process: Re-write is prohibited	-	-		
02	Data for adjusting process: Re-write is prohibited	-	-		
03	Data for adjusting process: Re-write is prohibited	-	-		
04	Selecting data control system	0~5	0	Impossible to set other than 0	
05	E.K.C. select	0~5	0 △	0: Not selected 1: Selected (no stop in limiting) 2: Selected (stop in limiting) 5: Selected (forced stop in limiting)	
06	Data for adjusting process: Re-write is prohibited	-	-		
07	FS-103 sub-tray is selected. (printer)	0,2,3	0	0: Not use 2: Sub-tray (reverse) 3: Sub-tray (normal)	△
08	ATS select	0~2	0	0: Not conducting ATS 1: ATS can be conducted for all steps 2: ATS cannot be conducted for only the upper step	
09	FS-103 original quantity over is controlled.	0~9	-	1:Stops (at max. 45 sheets) 2:Stops (at max. 40 sheets) 3:Stops (at max. 35 sheets) 4:Stops (at max. 50 sheets) 5:Stop after current copy (at max. 50 sheets) 6:Stop after current copy (at max. 45 sheets) 7:Stop after current copy (at max. 40 sheets) 8:Stop after current copy (at max. 35 sheets) 9:Stop after current copy (at max. 50 sheets)	△
10	F4 size select	0~3	0	0: 8.5×13 1: 8.25×13 2: 8.125×13.25 3: 8×13	
11	Data for adjusting process: Re-write is prohibited	-	-		
12	Temperature select in the pre-heating mode	0~2	0	0: 160°C 1: 170°C 2: 180°C	
13	Data for adjusting process: Re-write is prohibited	-	-	0: AB size 1: A size 2: 180°C	
14	Message language select	0~3		<Inside Japan> 0: Japanese 1: English 2: American English 3: French <KBM> 0: American English △ 1: English △ 2: French 3: Japanese <KBI> 0: English 1: French 2: German 3: Italian	
15	A size select (Europe) △	0~1		0: AB size 1: A size △	
16	△ Priority of the paper size Europe/USA (When APS released)	0~9		<KBM> 0: 11×17 1: 8.5×14 2: 8.5×11 3: 8.5×11R 4: 5.5×8.5 5: SPECIAL <KBI> 0: A3 1: A4 2: A4R 3: A5 4: OHTERS 5: F4 6: B5R 7: B5 8: B4	
17	△ Jumping selection of the paper size Europe/USA(Select by using P+cassette size button)	0~9			
18	△ Selecting the preferred cassette selection(Japan only)	0~9	0	0: Tray 1 1: Tray 2 2: Tray 3 3: Tray 4 4: By-pass	Japan only
19	Shut off time select in the pre-heating mode.	0~9	0	0 ~ 3: 1 hour 4 ~ 6: 2 hours 7 ~ 9: 3 hours	
20	FS-102/FS-103 paper overload control △	△ 0~9	△ 0 △	*D	△
21	AMS select	0~1	0	0: selected 1: not selected	
22	10^2 Setting intermittent time for running test	0~9	0	1 second to 255 seconds	
23	10^1		0		
24	10^0		1		
25	Data control system select (Protection setting 1)	0~2	0	0: protection 1: Canceling copy control protection 2: Canceling service control protection	
26	ADF frame erasing select	△ 0,5	△ 5	0: No 5: Yes (5mm frame)	

Address	Item		Setting range	Initialvalue	Change details	Remarks
27	10^5	PM cycle setting	△	*	*USA/Europe:120	
28	10^4		0~9	0*	*OTHERS :100	
29	10^2			0*	△	
30	△		△	△	△	
31	Original image shift setting		△ 0~7	KBM:7 Others:0	*C	
32	10^5			△ *	△USA/Europe :119999	
33	10^4		0~9	△ *		
34	10^3	Drum counter		△ *	*OTHERS :099999	
35	10^2			△ *		
36	10^1			△ *		
37	10^0			△ *		
38						
39	10^5			0		
40	10^4		0~9	0		
41	10^3	PM counter		0		
42	10^2			0		
43	10^1			0		
44	10^0			0		
45 △			0~2		0: Non sort preferring 1: Sort preferring	
46	Sorter initial mode setting		0~9	0	2: Group preferring 0: Cancellation 1 ~ 9: Abnormal	
47	Setting cancellation of fixing abnormality			0	0: No 1: 1 minute	
48 △	Auto reset setting		0~2 0~2	0	2: 2 minutes (In Europe, 1.5 minutes for both of 1 and 2) 0: No 1: Yes	
49	Selection of fixing control during automatic shut off		0~1	0	0: 1 count 1: 2 counts	
50	A3 copy 2 counts setting		-	0		
51	Data for adjusting process: Re-write is prohibited		0~8	0	0: No function	
52	Data control function select (Protect setting 2)		-	0	8: Canceling protection	
53	Data for adjusting process: Re-write is prohibited		-	1		
54	Data for adjusting process: Re-write is prohibited		-	0		
55	Data for adjusting process: Re-write is prohibited			3	*A	
56	Setting automatic button function and automatic function in setting ADF original setting		0~3 0~5	0	△ 0: Stop after stopping copy	
57	Setting of behavior when the key counter is interrupted immediately			0	5: Immediately stop *B	
58	Switching auto/manual priority		0~7 0~2	0	△ 0: Normal 1: Fine 2: S-fine	
59 △	Reading mode default		0~2	0	0: 1ED+2ED 1: 1ED+4ED 2: 2ED+4ED	
60 △	Switching the contents of normal/fine		0~3	0	0: 2mm 2: 3mm	
61	Selecting the erasing amount of the edge in ADF mode			2	2: 4mm 3: 5mm	

Address	Item	Setting range	Initialvalue	Change details		Remarks
62	Setting of auto shut off and auto pre-heating	0~6	2	<Shut off> 0: No 2: 6 minutes <Pre-heating> 0: No 5: 6 minutes	1: 2 minutes 3: 10 minutes 4: 2 minutes 6: 10 minutes	In Europe, 2 and 5 are 5 minutes
63~65	Data for adjusting process: Re-write is prohibited	-	-			

*A

Automatic button function	ADF original setting indication
Full auto	ADF select
*Manual select	ADF select
Full auto	Full auto
*Manual select	*Manual select

*Selectable by 25 mode p58

*B

ADF select	APS select	EE select
ADF	APS	EE
Platen	APS	EE
ADF	*Manual	EE
Platen	*Manual	EE
ADF	APS	Manual
Platen	APS	Manual
ADF	*Manual	Manual
Platen	*Manual	Manual

*APS is selectable only for USA machine.

*C

Data	1-2 mode	2-1 mode	Shift on a reverse side
0	Original has a margin	Original has a margin	Deletes a right margin on copying paper
1	Original has a margin	Original has no margin	
2	Original has no margin	Original has a margin	
3	Original has no margin	Original has no margin	
4	Original has a margin	Original has a margin	Shifts copying paper to the left
5	Original has a margin	Original has no margin	
6	Original has no margin	Original has a margin	
7	Original has no margin	Original has no margin	

*D

Operation \ Data	0~3 6~9	4	5
Performing lower limit detection by PS3(Tray lower limit)	●	●	●
Detecting PS7(Staple paper exit upper limit) abnormal ON by exiting paper(More than 1sec)	–	●	●
Detecting PS2(tray upper limit) abnormal ON by exiting paper.	–	●	●
Stop at predetermined number of copies.(*1)	–	–	●

*1
Offset mode

Paper size	capacity (the number of sheets)
B6R,A5R,5.5×8.5R	500
B5R,B5,A4R,A4 8.5×11R,8.5×11	2,000
B4R,F4R,A3R 8.5×14R,11×17R	1,500

Staple mode

The number of sheets	A3, 11x17 excluded		A3, 11x17	
	2 staple places	1 staple place	2 staple place	1 staple place
2~9	100 sets	100 sets	50 sets	100 sets
10~20	50 sets	50 sets	15 sets	20 sets
21~30	30 sets	30 sets	30 sets	30 sets
31~40	25 sets	25 sets	25 sets	25 sets
41~50	20 sets	20 sets	20 sets	20 sets

Address	Item	Setting range	Initialvalue	Change details	Remarks
66	Preliminary for paper size setting	0~9	-	<JAPAN> 0: A3 1: B4 2: A4R 3: B5R 4: A4 5: B5 6: B6 7: 8.5×14 8: 8.5×11R 9: 8.5×11 <USA>△ 0: 11×17 1: 8.5×14 2: 8.5×11R 3: 8.5×11 4: 5.5×8.5 <Europe>△ 0: A3 1: B4 2: A4R 3: B5R 4: A4 5: B5 6: A5 7: F4	
67	Setting paper size for tray 2		△ Japan:1 USA:2 Europe:0		
68	△ Setting paper size for tray 3 (1000 LCT)		△ Japan:5 USA:3 Europe:4		
69	△ Setting paper size for tray 4 (1500 LCT)		△ Japan:4 USA:3 Europe:4		
70	Selecting outside erasing the original	0~1	0	0: Outside erase the original 1:Entire image only in the platen mode 2: Transfer paper prior any time	△
71	Toner level detecting select	0~3	0	0: Display of toner replenishing after 100 copies 1 ~ 3: Display of toner replenishing after 1000 copies through 3000 copies	
72	10^7 Upper rank	0~9	0		
73	10^6		0		
74	10^5		0		
75	10^4 Master key code setting		0		
76	10^3		0		
77	10^2		0		
78	10^1		0		
79	10^0 Lower rank		0		
80	Data for adjusting process: Re-write is prohibited	-	-		
81	Data for adjusting process: Re-write is prohibited	-	-		
82	Data for adjusting process: Re-write is prohibited	-	-		
83 △	No toner counter (upper rank)				
84 △	No toner counter				
85 △	No toner counter				
86 △	No toner counter (lower rank)				
87	Data for adjusting process: Re-write is prohibited	-	-		
88	Switching longitudinal line/transversal line	0,1	0	0: All is transversal 1: A4/B5/transversal only for manual feeding	With regard to the initial value, 1 for only inside Japan, 0 for other countries
89 △	Slection of printer mode/copy mode when the power on.	△ 0,1	△ 0	0:Copier 1:Printer △ △	Only for printer
90	Selecting preliminary rotation of polygon motor	0~4	0	0: No preliminary rotation 1: Preliminary rotation is 14000 rpm 2: Preliminary rotation is 11024 rpm 3: Preliminary rotation is 8000 rpm 4: Stop	
91	Selecting the timing of polygon motor low speed rotation	0~3	0	0: 15 seconds 1: 30 seconds 2: 60 seconds 3: 120 seconds	
92	Selecting automatic outside erasing the original	0,1	0	0: Rectangular 1: Corresponding an oblique original	
93	Setting a pass word for the host computer	-	-	See the KRDS installation manual	
94	Setting time	-	-	See the KRDS installation manual	
95	Setting telephone No.	-	-	See the KRDS installation manual	
96	Setting serial No.	-	-	See the KRDS installation manual	
97	Data for adjusting process: Re-write is prohibited	-	-		
98	KRDS memory SW	-	-	See KRDS memory DIP-SW	

36 MODE

Mode 36 is provided in this machine as an adjustment method. By means of this mode, each adjustment is conducted.

Note: Dmax control and gradation correction control are not done when the machine turns on in the 36 mode if the fixer temperature is under 50°C.
It is recommendable to get 36 mode after confirming temperature ready in the normal mode.

[1] Setting Method

Step	Operation	Remarks (status)
1	While pressing the page quantity buttons 3 and 6, turn ON the main switch.	Selecting Mode 36.
2	Input an address No. by means of the page quantity button.	Setting the address No.
3	Press a copy button.	Conduct initial processing.
4	Press a P button. (*1)	Display data.
5	Input modified data by means of the page quantity button. (*1) Positive/negative is switched by means of a stop/clear button.	Modify data.
6	Press the P button. (*1)	Complete data modification.
7	Press the copy button. (*1)	Conduct a test copy.
8	Turn the main switch from OFF to ON.	Return to the standard mode.

*1 : Repeat Procedures 4 through 7 if necessary.

Display and input of data

a. In the case of 1 digit data, it flickers and displays as follows:
   Positive data .... ×
   Negative data .... –×
b. In the case of 2 digits data, it flickers and displays as follows:
   Positive data .... ××
   Negative data .... – and ×× flicker alternately.
c. How to input positive/negative.
   In inputting data, when pressing the stop/clear button, a sign is switched from positive to negative and from negative to positive.

Note: Since an operation method of the running test mode is different from above, obey items of the running test mode.

[2] Running Test Mode

Test temporary behavior in continuous copying.

Step	Operation (display)	Operation point
1	Set to Mode 36.	
2	Input a running code. (With regard to the code, see *1)	Page quantity setting button.
3	Turn ON the copy button. (Initial processing is conducted.)	Copy button
4	After completing warming up, turn ON the copy button. (Behavior starts.)	Copy button
5	Stop by means of the stop/clear button.	The stop/clear button.

*1 : Running code list

Code	Mode	Total counting
00	×100	Not counting
01	Non-paper	
02	×100+Non-paper	
03	Intermittent copy	
04	Intermittent copy+Non-paper	
10	×100	Counting
11	Non-paper	
12	×100+Non-paper	
13	Intermittent copy	
14	Intermittent copy+Non-paper	

[3] Adjusting the Timing of Front Edge

Adjustment of the timing of front edge adjusts a distance from the front edge of transcribed paper (copy paper) to the starting position of image writing. It includes the following 2 kinds:

(1) Lead edge adjustment for copy type

When one sheet is copied, and when plural sheets are copied, memorize the front edge timing of the first original in the memory.

Adjusting the timing from when the PS4(Paper restart)is ON by the exposure unit to when the Laser starts to write image.

(2) Lead edge adjustment for Electric RDH(E-RDH)type

In this machine, copy is made by the data from E-RDH in the following cases.

*Platen copy/RADF(1-1)

2nd and subsequent copies except for the superfine mode.

*RADF(1-2,2-1,2-2)

All copies except for the superfine mode.

Adjusting the timing from when PS18(NO feed)is ON by the paper to when the laser starts to write image.

Note:

1. There is “Front edge timing adjustment (printer system)” in P + 3 of Mode 35 - 80. However, it is not used because it is an outputting timing when this machine is used as a printer.
2. Front edge timing function in each tray and adjustment function in modification are not equipped with.

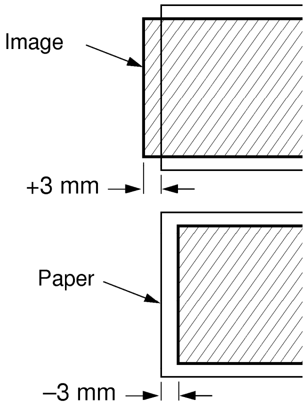
(1) Front edge timing adjustment (Copy type)

Step	Operation (display)	Operation point
1	Set to Mode 36.	Copy quantity setting button, main switch
2	Designate address 91.	Copy quantity setting button
3	Press a copy button and conduct initial processing.	Copy button
4	Set an A3 original to a platen glass correctly.	
5	Set a copy quantity to one.	Copy quantity setting button
6	Turn ON the copy button.	Copy button
7	Confirm the front edge timing of an outputted original visually.	
8	Press a P button.	P button
9	An existing set value is flickered on the copy quantity display unit. Variable range of set value - 99 to 00 to 99 Variable amount by one step 0.1 mm	Copy quantity setting button
10	Press a P button.	P button

(2) Front edge timing adjustment (E-RDH type)

Step	Operation (display)	Operation point
1	Set to Mode 36.	Copy quantity setting button, main switch
2	Designate address 98.	Copy quantity setting button
3	Press a copy button and conduct initial processing.	Copy button
4	Set an A3 original to a platen glass correctly.	
5	Set a copy quantity to two.	Copy quantity setting button
6	Turn ON the copy button.	Copy button
7	Confirm the front edge timing of the second sheets outputted original visually.	
8	Press a P button.	P button
9	An existing set value is flickered on the copy quantity display unit. Variable range of set value - 99 to 00 to 99 Variable amount by one step 0.1 mm	Copy quantity setting button
10	Press a P button.	P button

Standard value: -3 mm~+3 mm

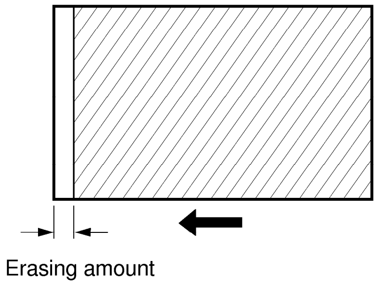


[4] Adjustment of Amount of Erasing the Front Edge of the Original

Adjust the amount of white cut at the front edge.

Step	Operation (display)	Operation point
1	Set to Mode 36.	Copy quantity setting button, main switch
2	Designate address 92.	Copy quantity setting button
3	Press a copy button and conduct initial processing.	Copy button
4	Set an original to a platen glass correctly.	
5	Turn ON the copy button.	Copy button
6	Confirm the amount of white cut at the front edge of the outputted original visually.	
7	Press a P button.	P button
8	An existing set value is flickered on the copy quantity display unit. Variable range of set value 00 to 99 Variable amount by one step 1 pixel (63.5 µm)	Copy quantity setting button
9	Press a P button.	P button

Standard value: Front edge erasing amount is within 3 mm

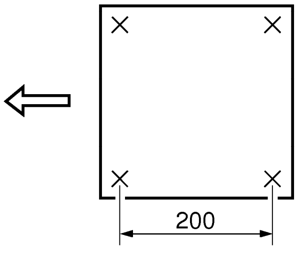


[5] Horizontal Magnification Adjustment

Adjust horizontal magnification in changing magnification.

Step	Operation (display)	Operation point
1	Set to Mode 36.	Copy quantity setting button, main switch
2	Designate address 93.	Copy quantity setting button
3	Press a copy button and conduct initial processing.	Copy button
4	Set an original to a platen glass correctly.	
5	Turn ON the copy button.	Copy button
6	Confirm size error of the outputted original by means of a scale.	
7	Press a P button.	P button
8	An existing set value is flickered on the copy quantity display unit. Variable range of set value - 20 to 00 to 20 Variable amount by one step 0.1 %	Copy quantity setting button
9	Press a P button.	P button

Standard value: Within 0.5% for the same magnification
Within 1 mm in 200 mm interval

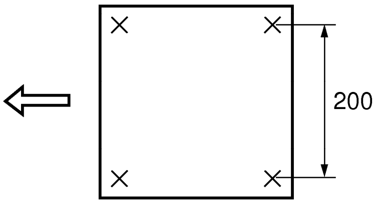


[6] Horizontal Magnification Adjustment

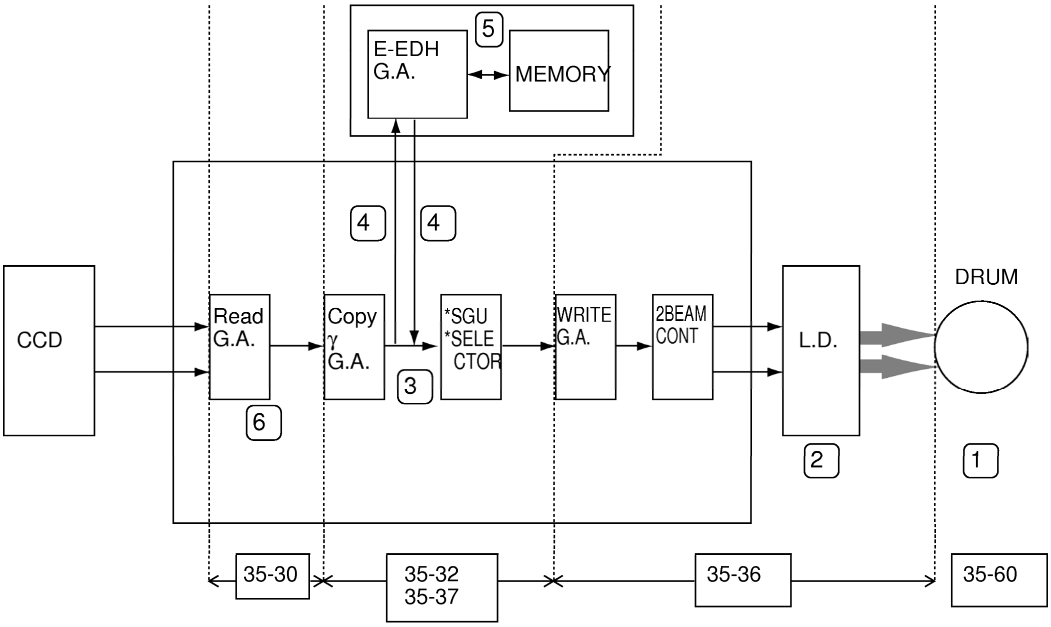
Adjust horizontal magnification in changing magnification.

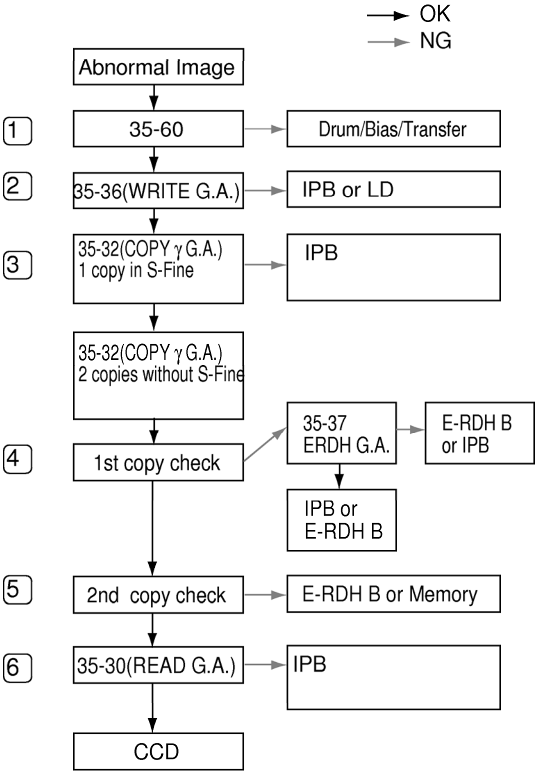
Step	Operation (display)	Operation point
1	Set to 36 mode.	Copy quantity setting button, main switch
2	Designate address 80.	Copy quantity setting button
3	Press a copy button and conduct initial processing.	Copy button
4	Set an original to a platen glass correctly.	
5	Turn ON the copy button.	Copy button
6	Confirm size error of the outputted original by means of a scale.	
7	Press a P button.	P button
8	An existing set value is flickered on the copy quantity display unit. Variable range of set value -10 to 00 to 10 Initial value: 00 Variable amount by one step: 0.1%	Copy quantity setting button
9	Press a P button.	P button

Standard value: Within 0.5% for the same magnification
Within 1 mm in 200 mm interval



Trouble check with Test Pattern


5
E-EDH
G.A.
MEMORY
4
4
CCD
Read
G.A.
6
Copy
γ
G.A.
3
*SGU
*SELE
CTOR
WRITE
G.A.
2BEAM
CONT
L.D.
2
DRUM
1
35-30
35-32
35-37
35-36
35-60


OK
NG
Abnormal Image
1
35-60
Drum/Bias/Transfer
2
35-36(WRITE G.A.)
IPB or LD
3
35-32(COPY γ G.A.)
1 copy in S-Fine
IPB
35-32(COPY γ G.A.)
2 copies without S-Fine
4
1st copy check
35-37
ERDH G.A.
E-RDH B
or IPB
IPB or
E-RDH B
5
2nd copy check
E-RDH B or Memory
6
35-30(READ G.A.)
IPB
CCD

[7] Paper Feeding Loop Amount Adjustment

Adjust the loop amount for each tray in paper feeding.

Step	Operation (display)	Operation point
1	Set to Mode 36.	Copy quantity setting button, main switch
2	Designate address 94.	Copy quantity setting button
3	Press a copy button and conduct initial processing.	Copy button
4	Set an original to a platen glass correctly.	
5	Select a paper feeding tray.	Paper size button
6	Turn ON the copy button.	Copy button
7	Confirm the outputted original visually.	
8	Press a P button.	P button
9	An existing set value is flickered on the copy quantity display unit. Variable range of set value - 20 to 00 to 50 (99) Variable amount by one step 1ms	Copy quantity setting button
10	Press a P button.	P button

* In paper feeding, variable range of loop amount is - 20 to 99.

[8] Optical Brake Amount Adjustment (Not Necessary in the Field)

[9] List of Mode 36

Classification	Code	Mode	Contents
For process	00	×100 mode	It becomes possible to copy setting quantity ×100.
	01	Non-paper mode	Turn sensing by means of jamming sensing sensor OFF, and copy at timing estimated.
	02	×100 + non-paper mode	Turn sensing by means of jamming sensing sensor OFF, and copy set quantity ×100 at timing estimated.
	03	Intermittent copy mode	Repeat copying behavior for set quantity and waiting set for set cycles.
	04	Intermittent copy + non-paper mode	Turn sensing by means of jamming sensing sensor OFF, and repeat copying behavior for set quantity and waiting set for set cycles.
For development	10	×100 mode	Conduct the same behavior as 00, 01, 02, 03 and 04 above. Though the total counter is not counted up in the above-mentioned modes, count up in these modes.
	11	Non-paper mode	
	12	×100 + non-paper mode	
	13	Intermittent copy mode	
	14	Intermittent copy + non-paper mode	
C	80	Data adjustment mode	Mode wherein each adjustment is performed without turning ON/OFF the power. P+1: Vertical Magnification adjustment P+2: Horizontal Magnification adjustment P+4: Optical brake amount adjustment P+5: Front edge timing adjustment (E-RDH system) P+6: Front edge timing adjustment (copy system) P+7: Original front edge erasure adjustment P+8: Paper feed loop amount adjustment
For market adjustment C	91	Front edge timing adjustment mode (copy type)	Mode wherein timing between a transcribed paper and an original image is adjusted while copying. - 99 ← 00 → 99 (slow) (speedy) Changing amount of data 1 = 0.1 mm
C	92	Adjustment of amount of erasing the front edge of the original	Mode wherein the amount of front edge white cutting is adjusted while copying From the front edge of the original, white-cut for set pixel number. 00 → 99 Change amount of data 1 = 1 pixel = 63.5 µm
C	93	Horizontal magnification adjustment	Mode where in horizontal magnification is adjusted while copying. - 20 ← 00 → 20 (short) (long) Changing amount of data 1 = 0.1 %
C	94	Paper feeding loop amount adjustment	Mount wherein amount of paper feeding loop is adjusted while copying. - 20 ← 00 → 50 (small) (large) Changing amount of data 1 = 1 msec
C	96	Optical brake amount adjustment	Mode wherein starting time of an optical brake is adjusted while copying. 0 ← 5 → 9 (small) (large) Changing amount of data 1 = 2 msec
C	98	Front edge timing adjustment mode (E-RDH type)	Mode wherein timing between a transcribed paper and an original image is adjusted while outputting from the E-RDH. - 99 ← 00 → 99 (slow) (speedy) Changing amount of data 1 = 0.1 mm
C	31	ADU centering error adjustment	Same functions as 35 mode 80 (p+2)

35 MODE

In this machine, 35mode is equipped as a confirmation method (partially, adjusted) for an image processing unit and a writing unit. By means of this mode, an internal pattern is outputted for confirming and adjusting each.

Note: With regard to modes not described in particular, do not touch.

Note: Dmax control and gradation correction control are not done when the machine turns on in the 35 mode if the fixer temperature is under 50°C.
It is recommendable to get 35 mode after confirming temperature ready in the normal mode.

[1] Setting Method

Step	Operation	Remarks (status)
1	While pressing the page quantity setting buttons 3 and 5, turn the main switch ON.	Select Mode 35.
2	Input an address No. by means of the page quantity setting button.	Set an address No.
3	Press a copy button.	Conduct initial processing.
4	While pressing a P button, designate a code No. (*1)	P button + the page quantity setting button.
5	Press the P button. (*1)	Display data.
6	Input modified data by means of the copy quantity setting button. (*1) Switch positive/negative by means of a stop/clear button.	Modify data.
7	Press the P button. (*1)	Data modification is completed.
8	Press a copy button. (*1)	Conduct test copy.
9	Turn the main switch from OFF to ON.	Return to the normal mode.

*1 : Repeat procedures 4 through 8 if necessary.

[2] Adjustment Centerring Error

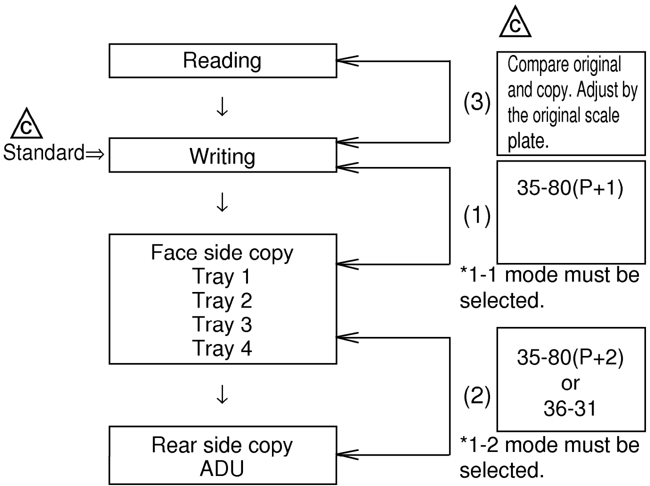
Centerring error adjustment adjusts space from a side of a transcribed paper (a copy paper) to a transcribed image. When adjusting, be sure to obey the following procedures.

(1) Align each tray with a writing position to the drum by means of a laser beam as the standard.
(Adjustment of centerring error of writing unit.)
Due to this, complete adjustment for centerring error between the drum and the tray in copying the face side.

(2) Align ADU with a face side copy original as a standard.
(Adjustment of ADU centerring error for A5R)
Due to this, complete adjustment for centerring error between a face side and a rear side.

(3) Adjust writing timing to a drum with writing data by means of an exposure unit as a standard.
(Adjustment of centerring error of original image.)
Due to this, alignment of the reading portion and the writing portion is completed. In addition, a series of centerring error adjustment is completed.

Relation between copy process and adjustment for Centerring error


Reading
Standard⇒
Writing
Face side copy
Tray 1
Tray 2
Tray 3
Tray 4
Rear side copy
ADU
(3)
Compare original and copy. Adjust by the original scale plate.
(1)
35-80(P+1)
*1-1 mode must be selected.
(2)
35-80(P+2)
or
36-31
*1-2 mode must be selected.

*For A5R/5.5×8.5R only

Note:

- Memory data must not be changed in (1).
  They must be adjusted at each tray mechanically.
- Adjustment(2) is for A5R. (They can be adjusted by changing memory data).
  Centering for other than A5R is automatically adjusted by IPDB (inclination paper detection board).
- A5R is only for Europe.

(1) Checking on writing unit for centerring error

Step	Operation (display)	Operation point
1	Set to Mode 35.	Copy quantity setting button, main switch
2	Designate address 80.	Copy quantity setting button
3	Press a copy button and conduct initial processing.	Copy button
4	Select "A3, from one side to one side" mode.	Copy mode button
5	Select an adjustment tray.	Paper size button
6	Turn ON the copy button, and output the test pattern.	Copy button
7	Fold the test pattern into two longitudinally, and confirm whether or not the left line and the right line superpose completely.	
8	In abnormality, adjust on each tray for centerring error. (*1)	

*1 : With regard to mechanical adjustment method on each tray, see "Other adjustment".

(2) Checking on ADU for centerring error for A5R/ 5.5×8.5only (Mechanical adjustment method)

Step	Operation (display)	Operation point
1	Set to Mode 35. (*1)	Copy quantity setting button, main switch
2	Designate address 80.	Copy quantity setting button
3	Press a copy button and conduct initial processing.	Copy button
4	Press a image read button and select fine mode.	Image read button
5	Select "A3, from one side to both side" mode.	Copy mode button
6	Select an adjustment tray.	Paper size button
7	Turn ON the copy button, and output the test pattern.	Copy button
8	Confirm the front surface and the rear surface of the central line of the test pattern superpose.	
9	In abnormality, adjust on each tray for centerring error. (*2)	

*1 : With regard to detail of Mode 35, see "Mode 35".

*2 : With regard to mechanical adjustment method on ADU, see "Other ad to justment".

: If the error is 8 to 10mm at A4 backside, check the IPDP and/or LED1.

: If the error is 8 to 10mm at A4 backside, check the IPDP and/or LCD1.

(3) Adjustment on ADU for centering error for A5R/ 5.5×8.5 only (Electrical adjustment method)

Step	Operation (display)	Operation point
1	Set an original to a platen glass correctly.	
2	Turn ON the copy button.	Copy button
3	Confirm the outputted original visually.	
4	Adjust centering by moving the scale plate front or rear side.	
5	Repeat from 1 to 4 until the adjustment completes.	

(4) Adjustment on original image for centerring error

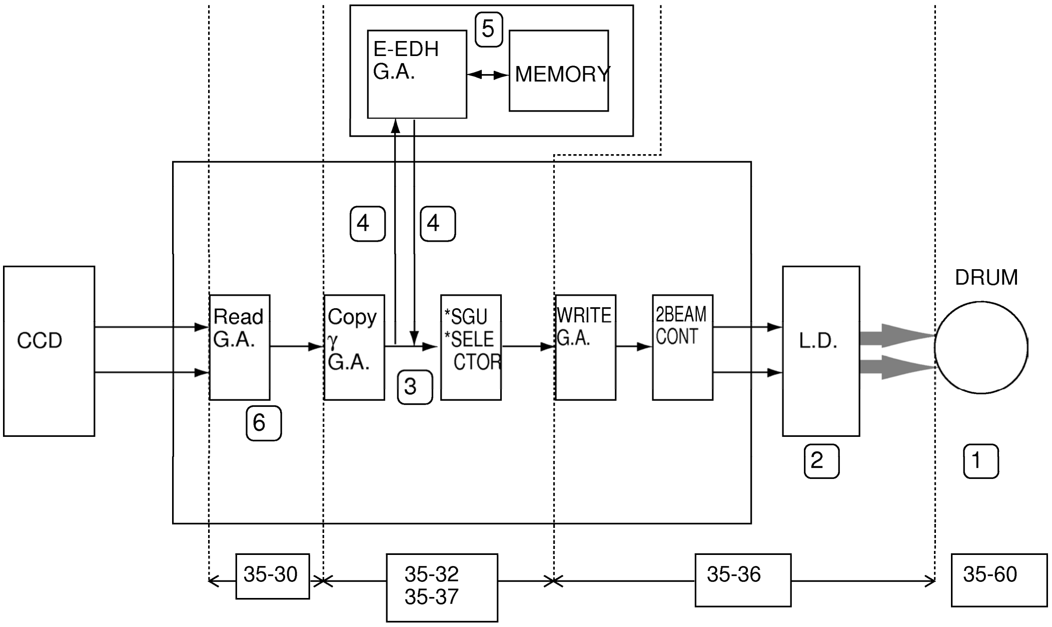
Step	Operation(display)	Operation point
1	Select to Mode 35. (×1)	Copy quantity setting button,main switch
2	Designate address go.	Copy quantity setting button
3	Press Copy button and coduct initial processing.	Copy button
4	Press image read button and select normal mode.	Image read button
5	Select A5R or 5.5×8.5 in the upper tray.	Paper size button
6	Select"one side to both side"mode.	Copy mode button
7	Press copy button and print test pattern.	Copy button
8	Measure Centering error on the back surface. Within ± 2mm in OK.	
9	In case of out of the range,press P and 2 buttons simultaneously.	P button, 2 button
10	Current value is displayed. Set a new value. Setlable range. -94 to 00 to 94	Copy quantity setting button
11	Press P button.	P button
12	Repeat steps 7 to 11until the error fall in the range	

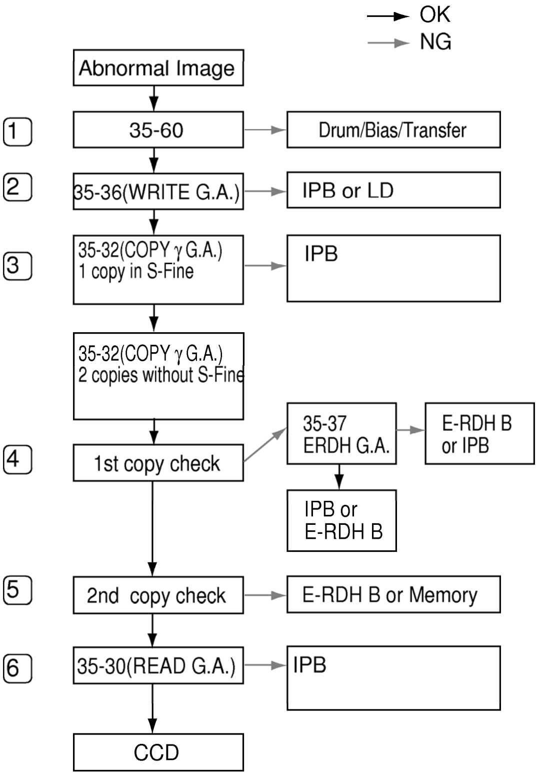
*1 : With regard to detail of Mode 35, see "Mode 35".

[3] List of Mode 35

No.	Address No.	Adjustment item	Checking point	Data re-write
1	35-01	Overall halftone (halftone)	• Black/white stripes, uneven density	×
		Overall halftone (white)	• Gray-background	×
		Overall halftone (black)	• Copy density, uneven density	×
2	35-02	Gray scale pattern	• Copy density, uneven density	×
3	35-03	Gray scale pattern	• LD1/LD2 gradation	O (by 35-80 mode) (P+6/P+7)
4	35-05	Gray scale pattern	• LD1/LD2 gradation (starting point)	
5	35-11	Beam position check	• Beam misaligment	×
6	35-16	Image position	• Magnification, leading edge timing, etc	×
7	35-60	Potential halftone	• White stripes	×
8	35-30	Gray scale pattern	• Board checking	×
9	35-32	Gray scale pattern	• Board checking	×
10	35-36	Gray scale pattern	• Board checking	×
11	35-37	Gray scale pattern	• Board checking	×
12	35-80 (P+1)	Confirming on writing unit for centerring error	• Centerring error on face sided copy	×
13	35-80 (P+2)	Confirming on ADU unit for centerring error	• Centerring error on rear sided copy	O
14	35-80 (P+3)	Leading edge timing	-	×
15	35-80 (P+4)	Vertical magnification	-	×
16	35-80 (P+5)	Main/Sub scanning beam alignment	• LD1/LD2 scanning position	×
17	35-80 (P+6)	Confirming on writing unit for start timing	• LD1 gradation (starting point)	O
18	35-80 (P+7)	Confirming on writing unit for start timing	• LD2 gradation (starting poing)	O

Trouble check with Test Pattern


5
E-EDH
G.A.
MEMORY
4
4
CCD
Read
G.A.
Copy
γ
G.A.
3
*SGU
*SELE
CTOR
WRITE
G.A.
2BEAM
CONT
L.D.
DRUM
6
2
1
35-30
35-32
35-37
35-36
35-60


OK
NG
Abnormal Image
1
35-60
Drum/Bias/Transfer
2
35-36(WRITE G.A.)
IPB or LD
3
35-32(COPY γ G.A.)
1 copy in S-Fine
IPB
35-32(COPY γ G.A.)
2 copies without S-Fine
35-37
ERDH G.A.
E-RDH B
or IPB
4
1st copy check
IPB or
E-RDH B
5
2nd copy check
E-RDH B or Memory
6
35-30(READ G.A.)
IPB
CCD

[4] Test Pattern of Mode 35

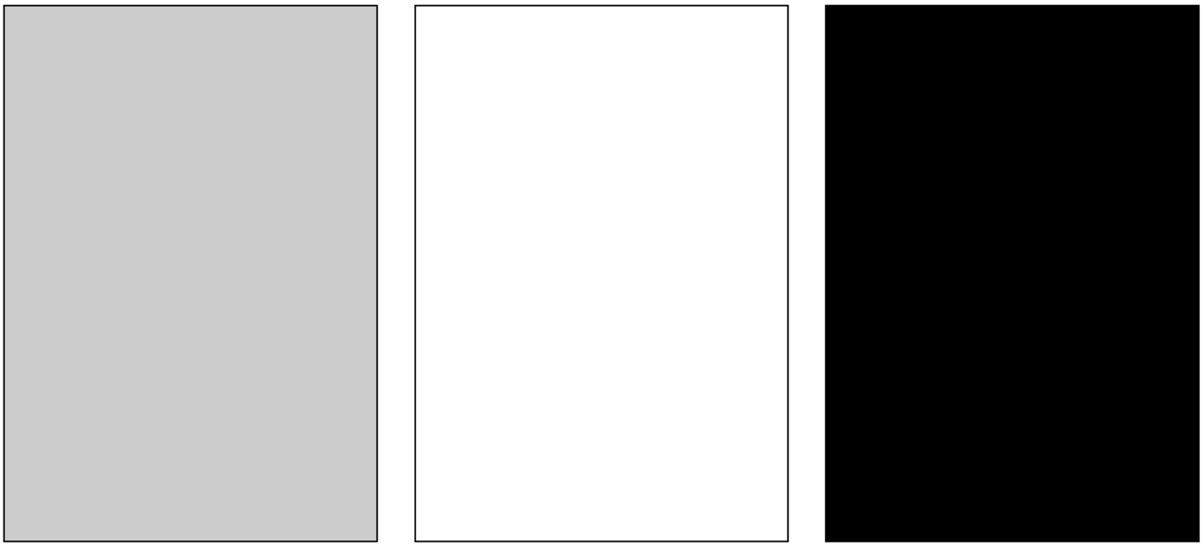
35-01	Overall halftone

[Check item]

- * When the density is set to 70 (halftone)
  If white stripes, black stripes, or uneven density can be seen, determine which of the scanner system and the printer system is abnormal.
- * When the density is set to 0 (white)
  If the test pattern is fogged, determine which of the scanner system and the printer system (writing section, process section) is abnormal.
- * When the density is set to 255 (black)
  If the density is light, determine which of the scanner system and the printer system is abnormal.

- * For details of setting the density, refer to [8] "Test Pattern Density Adjustment" on Page 5-14.

Test pattern



Data 70 (Half tone)

Data 0 (White)

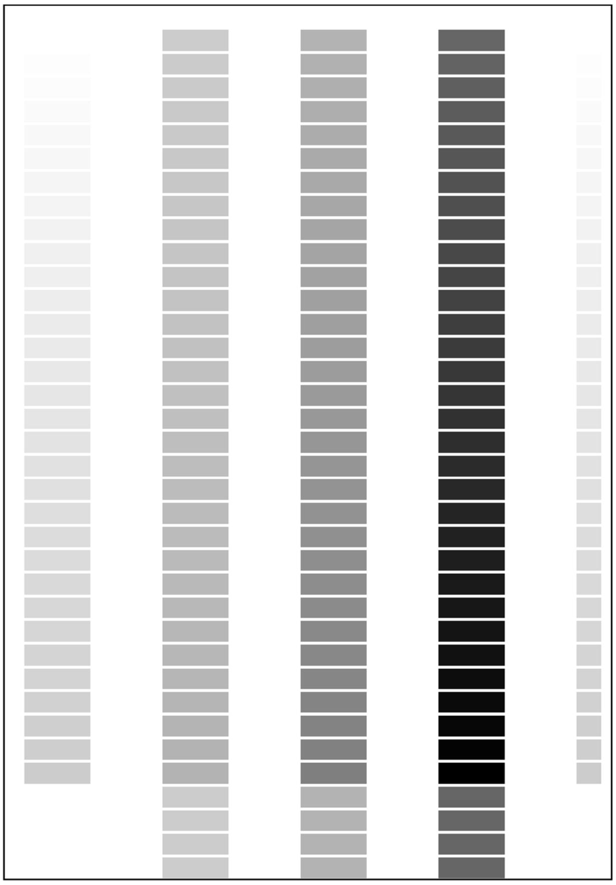
Data 255 (Black)

35-02	Gray scale pattern

[Check item]

If the test pattern is fogged or the density is light, determine which of the processing system and γ correction correction is abnormal. If the copy image is abnormal despite this test pattern being normal, either the image processing system or the scanner system is abnormal.

Test pattern

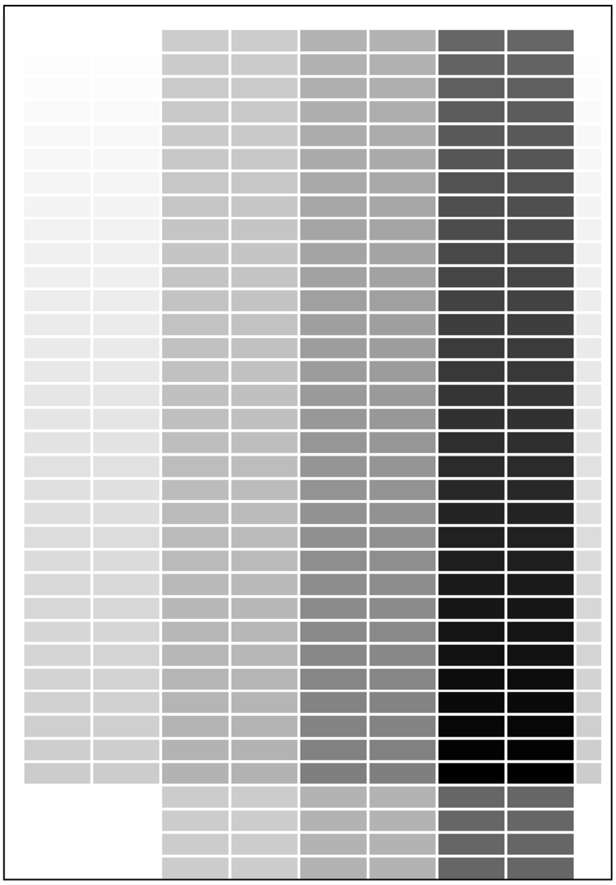


35-03 Gray scale pattern

[Check item]

⚠ If the test pattern appears abnormal, check to see if the two lasers are functioning normally using 35-80(P+6/P+7).

Test pattern



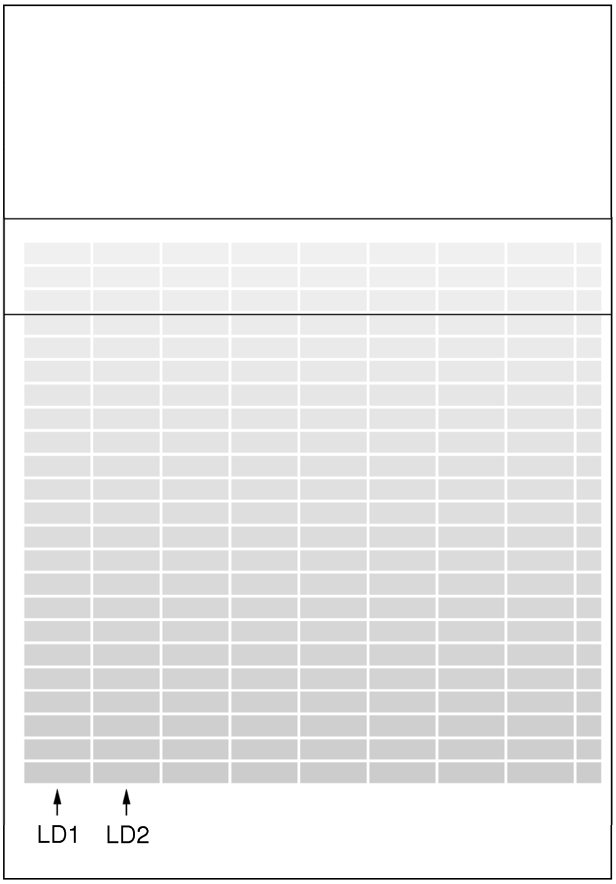
35-05 Gray scale pattern

[Check item]

If the test pattern is abnormal, check to see if light is output from the two lasers.
(Adjustment by 35-80 mode P+6/P+7)

⚠ **Note:** This 35-05 and 35-80 have different characteristics in low density erea.
Use 35-80 for adjustment.

Test pattern



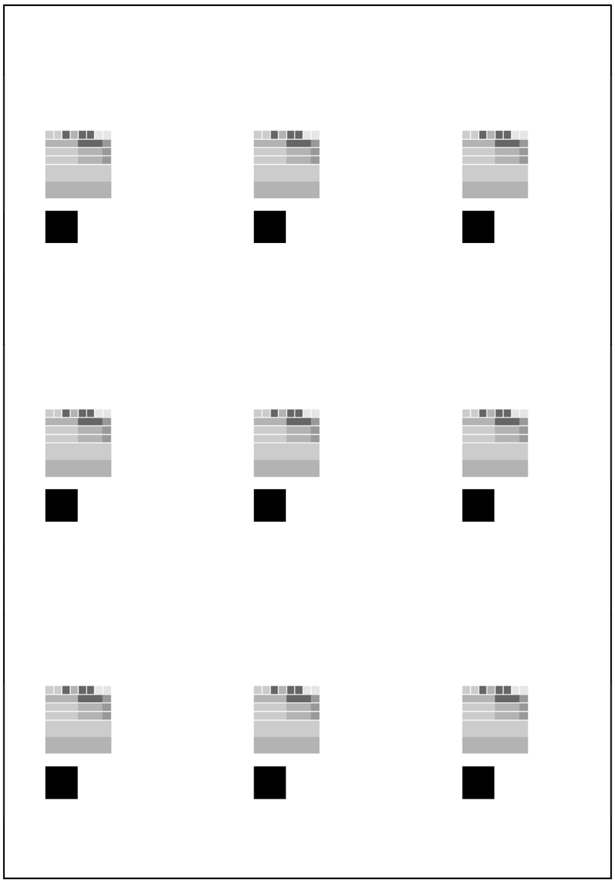
35-11

Beam misalignment check

[Check item]

C Confirm misalignment of two beams.

Test pattern

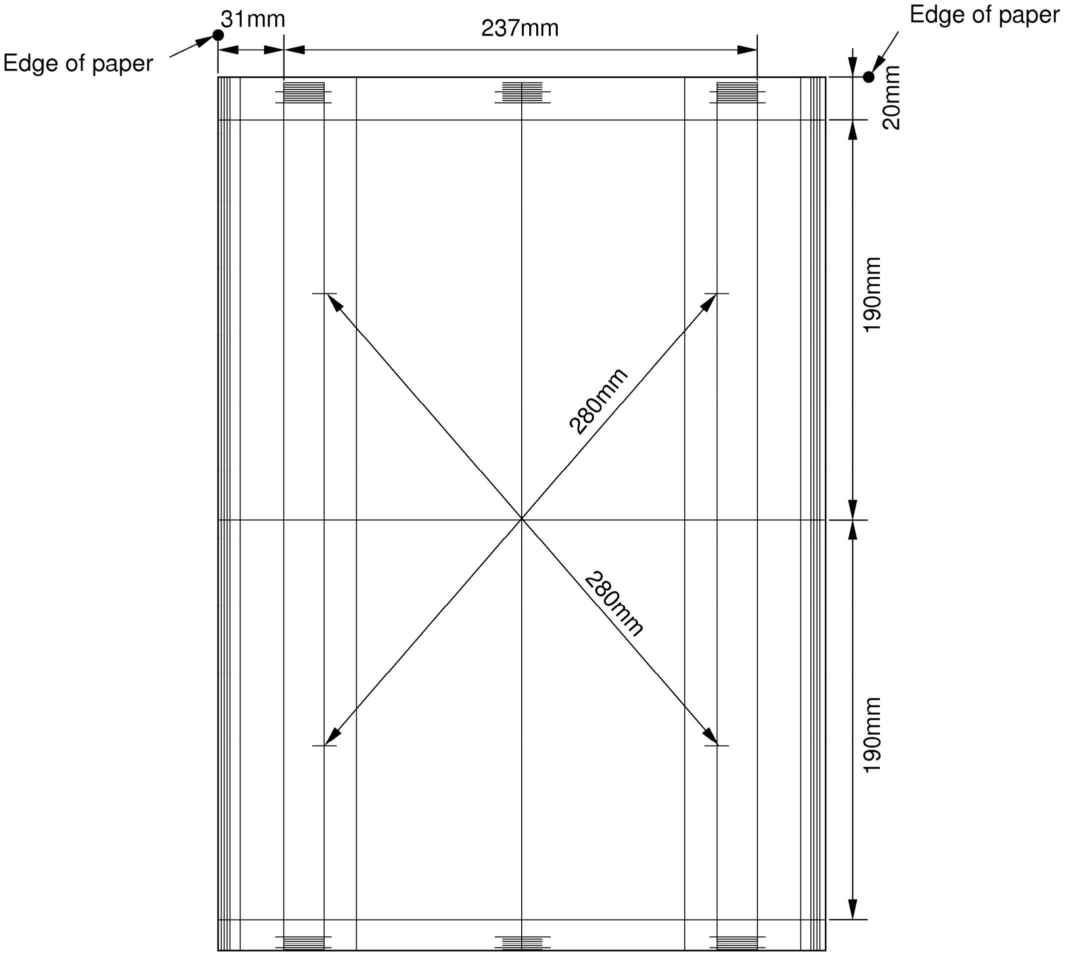


35-16 Linearity evaluation pattern

[Check item]

Judge from this test pattern which of the scanner system and the printer system is abnormal. Items that can be checked include horizontal magnification, vertical magnification, tilt image, and leading edge timing of the printer system. If the copy image is defective despite no abnormality being visible on the test pattern, the scanner system is defective.

Test pattern


31mm
237mm
Edge of paper
Edge of paper
20mm
190mm
280mm
280mm
190mm

35-60

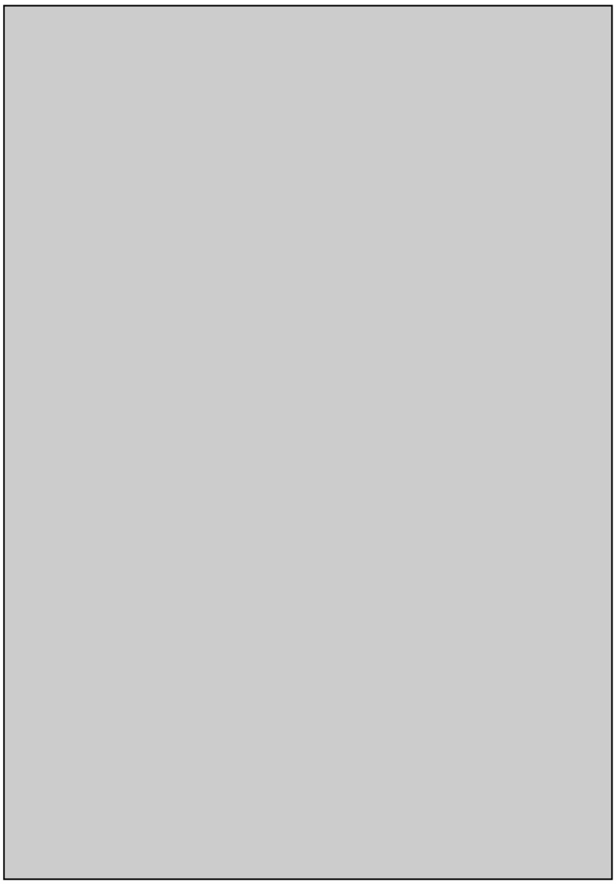
Process overall halftone

[Check item]

This test pattern is intended to judge which of the scanner system, the write system and process system is the cause of an abnormality such as white stripes, black stripes and uneven density.
By using this test pattern, a copy process takes place with changing the charging voltage,etc, and halftones are output. If the test pattern appears abnormal, the processing system is abnormal.

Note: It is not recommendable to use this mode frequently because the toner image is formed on the drum outside the paper.

Test pattern

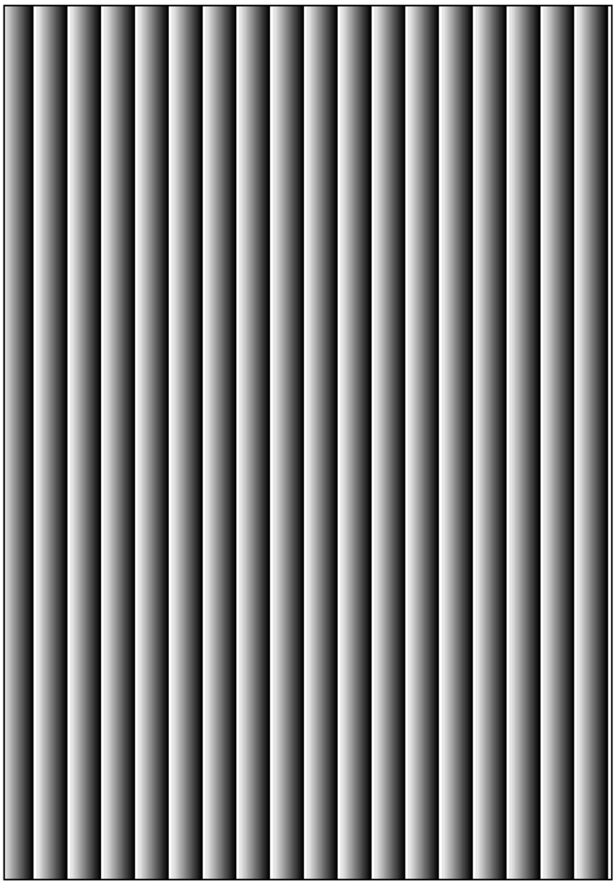


35-30	Read GA built-in pattern

[Check item]

This test pattern is intended to judge whether or not the abnormal section is located before the image processing board. If the test pattern is an 8-bit output and is normal, the fault lies in the CCD board before the image processing board.

Test pattern



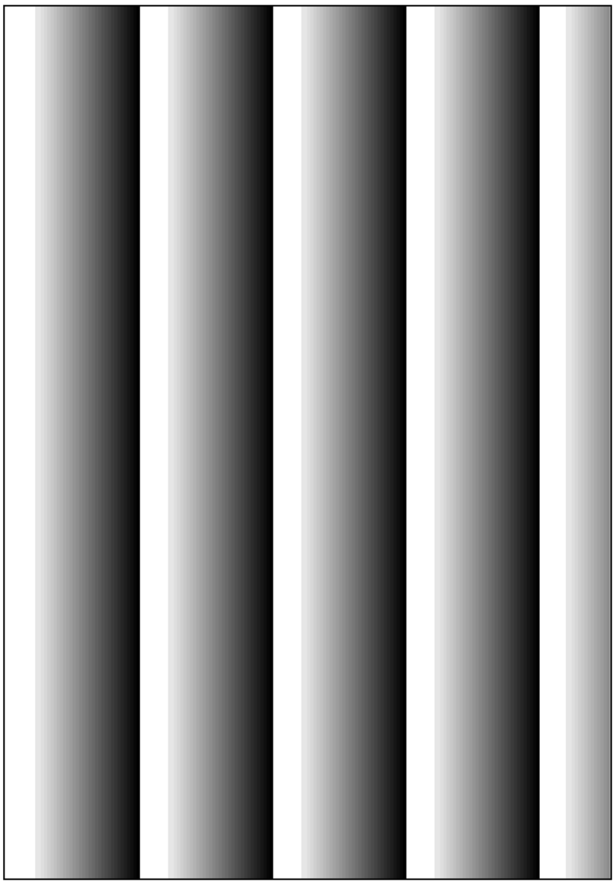
35-32

Copy γ GA built-in pattern

[Check item]

This test pattern is intended to judge whether or not the electronic RDH board is abnormal.
There are two test patterns which correspond to the 8-bit mode in which the electronic RDH is not used, and the mode in which it is used, respectively. The test pattern checks the state of the electronic RDH board. If an abnormality is found when an electronic RDH is used with several copies of the test pattern output, there is an abnormality in the electronic RDH. In this case, an abnormality in the test pattern excludes any difference in error dispersion.

Test pattern

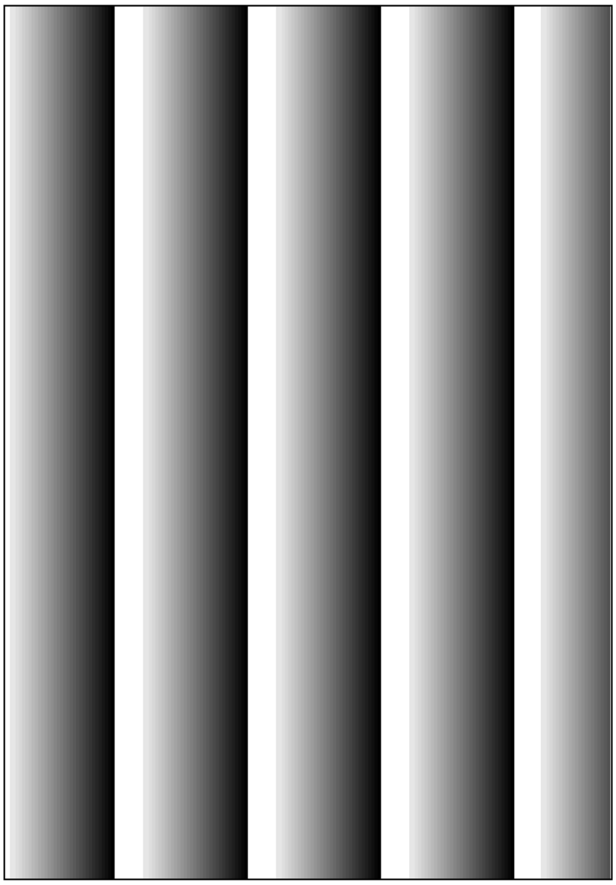


35-36	Write GA built-in pattern

[Check item]

This test pattern is intended to judge whether or not the cause of an abnormality is located in or after the image processing board. If the test pattern is abnormal, there is an abnormality in or after the image processing board (PWM function or after).

Test pattern



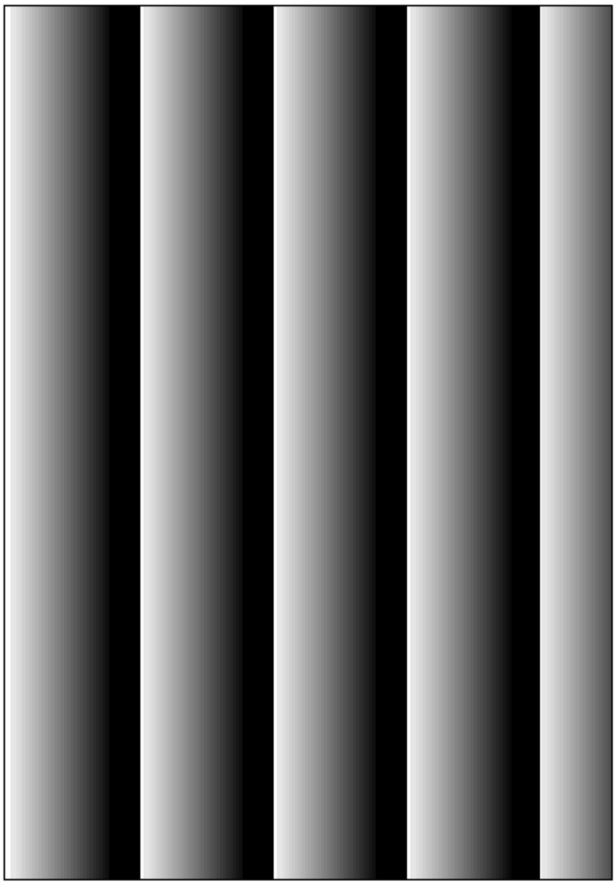
35-37	Electronic RDH GA built-in pattern

[Check item]

This test pattern is intended to determine if the electronic RDH board or image processing board is abnormal in the case where the copy image is abnormal despite the 35-36 mode pattern being normal.

If the 35-36 mode pattern is normal but the test pattern is abnormal, there is an abnormality in either the electronic RDH or the image processing board.

Test pattern

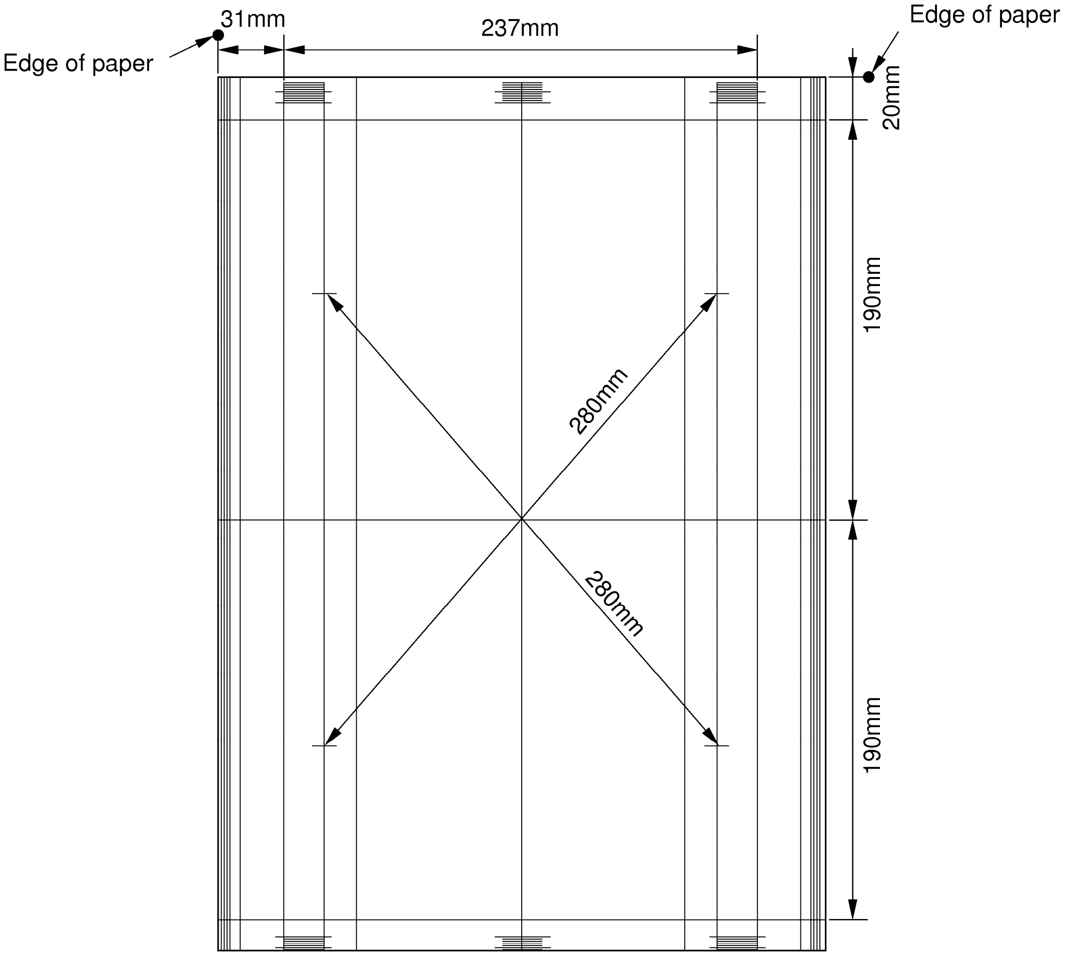


35-80 (P+1)	Confirming on writing unit for centerring

[Check item]

Judge from this test pattern which of the scanner system and the printer system (writing section, process section) is abnormal. Items that can be checked include horizontal magnification, vertical magnification, tilt image, and leading edge timing of the printer system. Especially, this mode is used for centerring error. If the copy image has centerring error, adjustment should be done by position changing of each tray.

Test pattern


31mm
237mm
Edge of paper
Edge of paper
20mm
190mm
280mm
280mm
190mm

35-80 (P+2)

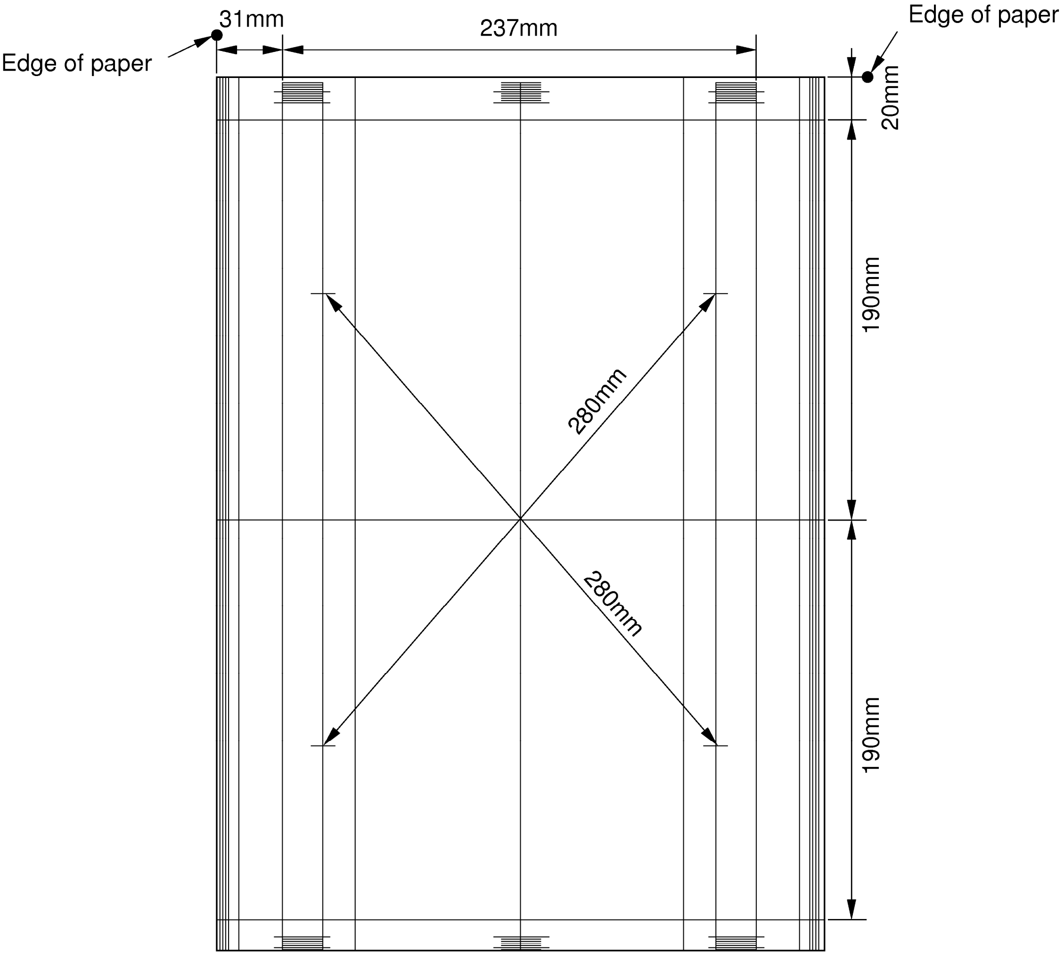
Confirmation on ADU for centerring

[Check item]

Judge from this test pattern which of the scanner system and the printer system (writing section, process section) is abnormal. Items that can be checked include horizontal magnification, vertical magnification, tilt image, and leading edge timing of the printer system. Especially, this mode is used for centerring error. If the copy image has centerring error, adjustment should be done by position changing of ADU unit.

⚠ **Note:** Use this mode to adjust A5R paper centering error.

Test pattern

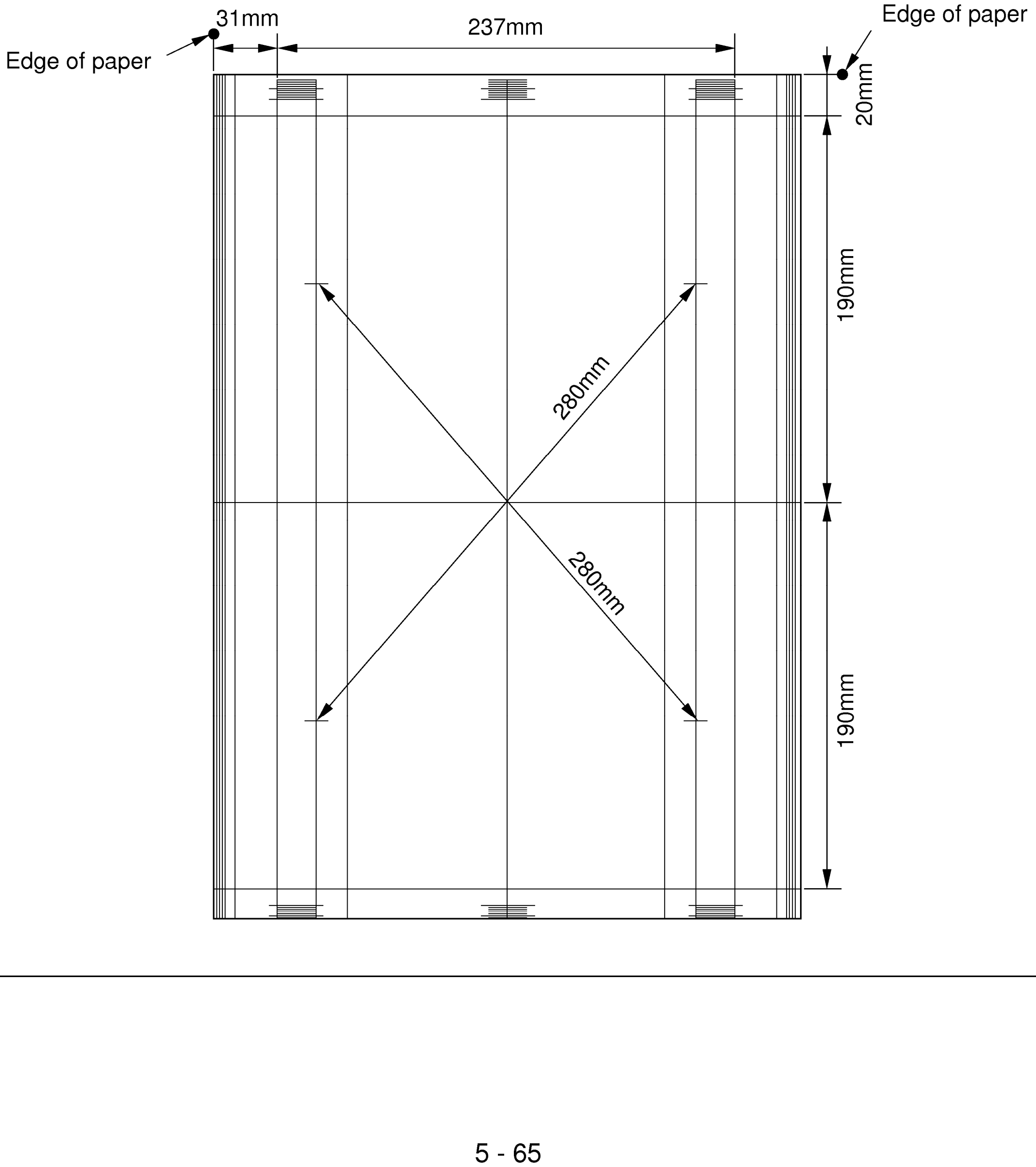

31mm
237mm
Edge of paper
Edge of paper
20mm
190mm
280mm
280mm
190mm

35-80 (P+3)

Confirmation of front edge timing (printer)

[Check item]

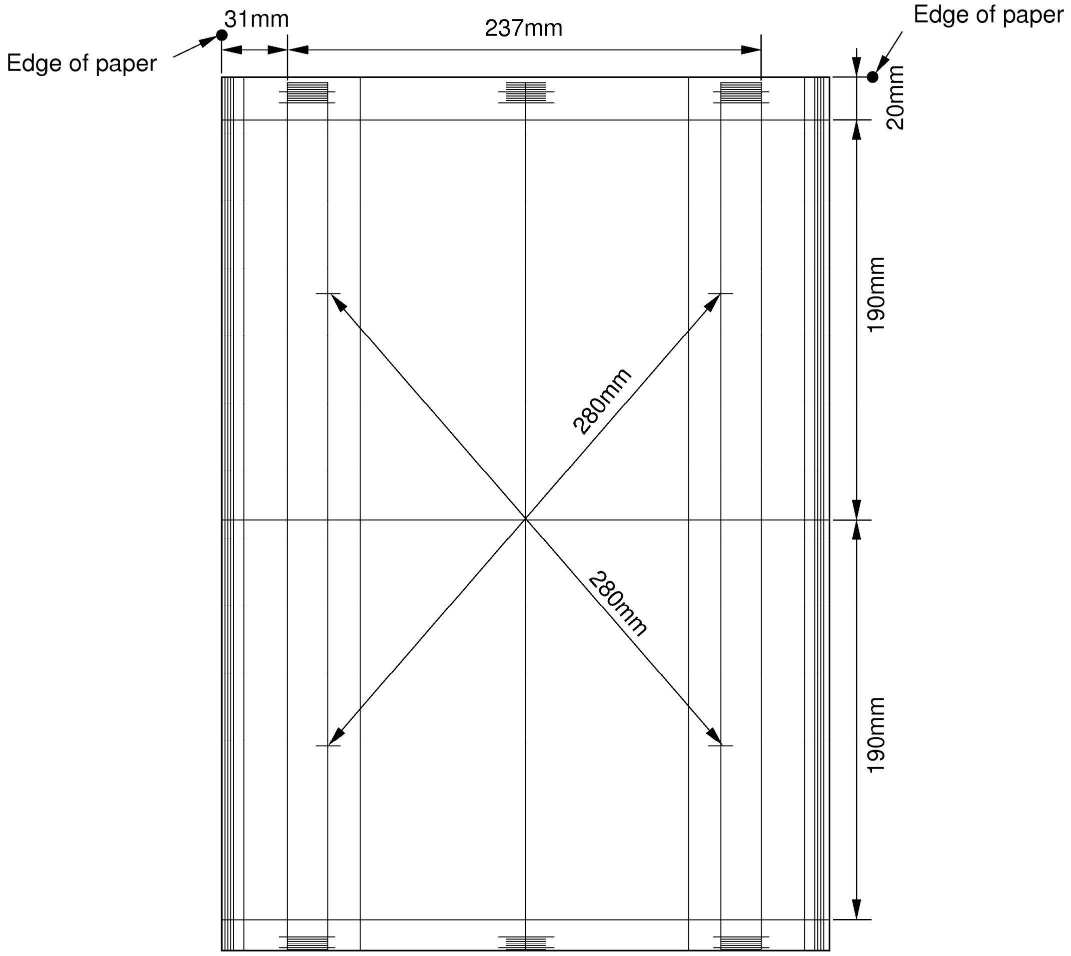
Test pattern


31mm
237mm
Edge of paper
Edge of paper
20mm
190mm
280mm
280mm
190mm

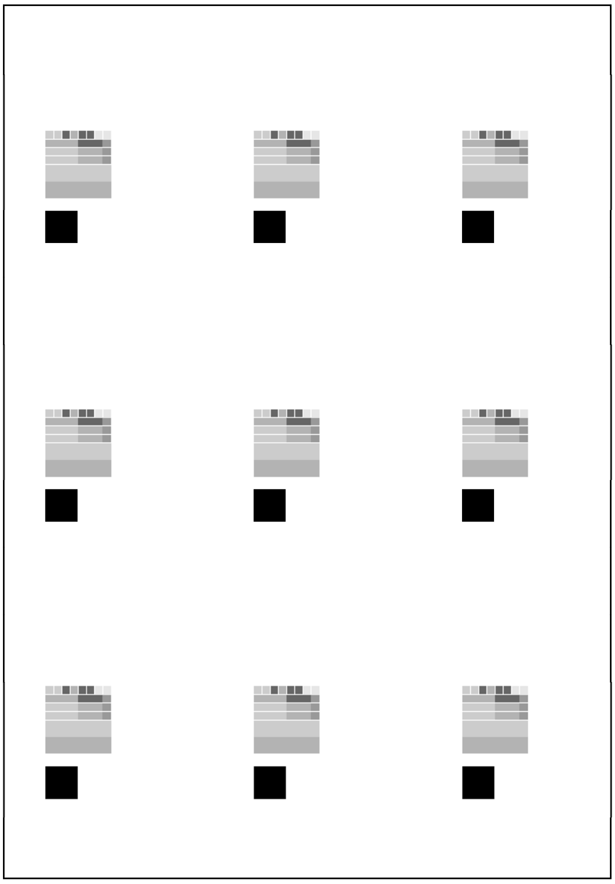
35-80 (P+4)	Confirmation of printer type vertical magnification (Main drive speed adjustment)

[Check item]

Test pattern


31mm
237mm
Edge of paper
Edge of paper
20mm
190mm
190mm
280mm
280mm

35-80 (P+5)	Confirming the main scanning/sub-scanning alignment
[Check item] Ⓒ Confirm the two-beam mis-alignment. (Same as 35-11 mode)	
Test pattern	



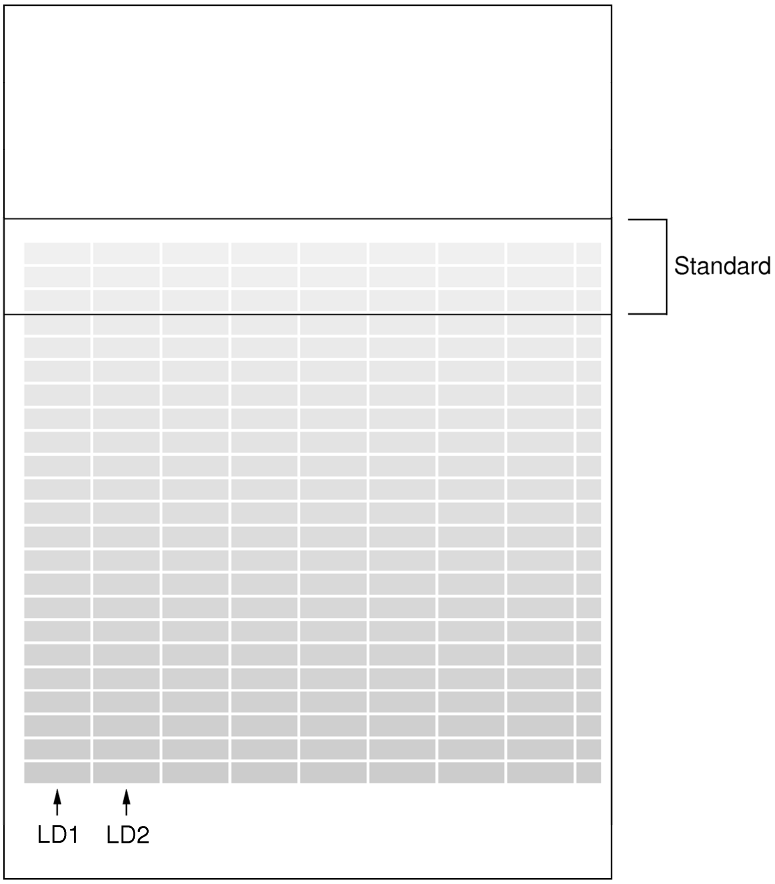
35-80 (P+6)

Adjustment of gradation property (LD1)

[Check item]

Ⓒ If the test pattern is abnormal, adjust the start position of writing.
Start position of the LD1 writing should be within the range shown below(inside between 2 lines.)
(Adjustment by changing data, adjustment range : -64~+64)

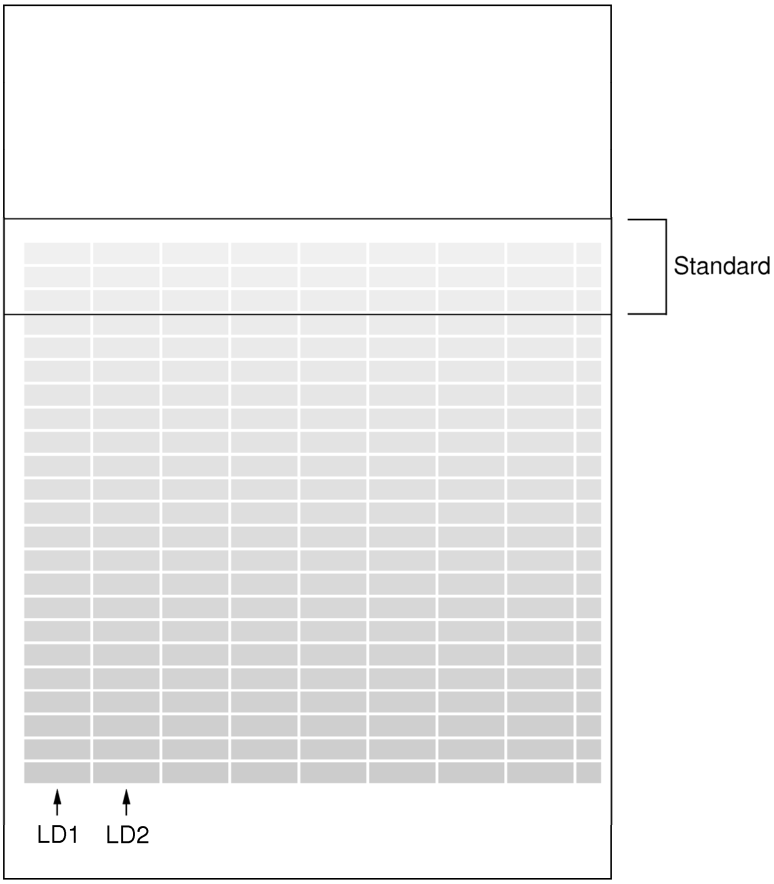
Test pattern



35-80 (P+7) | Adjustment of gradation property (LD2)

[Check item]
⚠ If the test pattern is abnormal, adjust the start position of writing.
Start position of the LD2 writing should be within the range shown below(inside between 2 lines.)
(Adjustment by changing data, adjustment range : -64~+64)

Test pattern



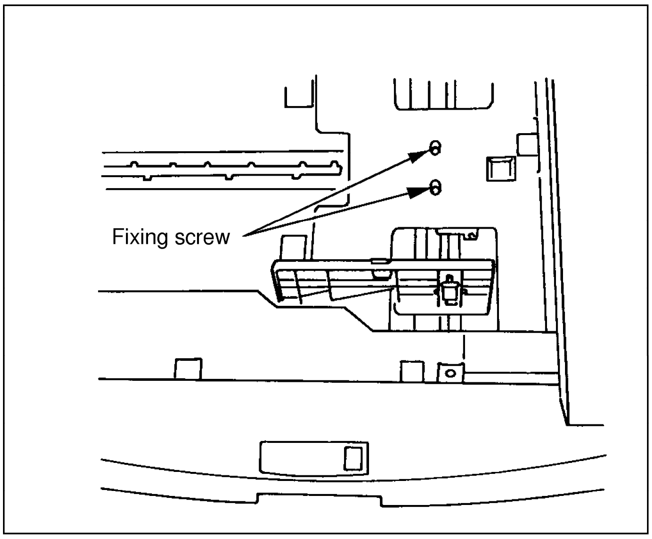
OTHER ADJUSTMENT

[1] Adjustment for Centerring error

1. Tools used

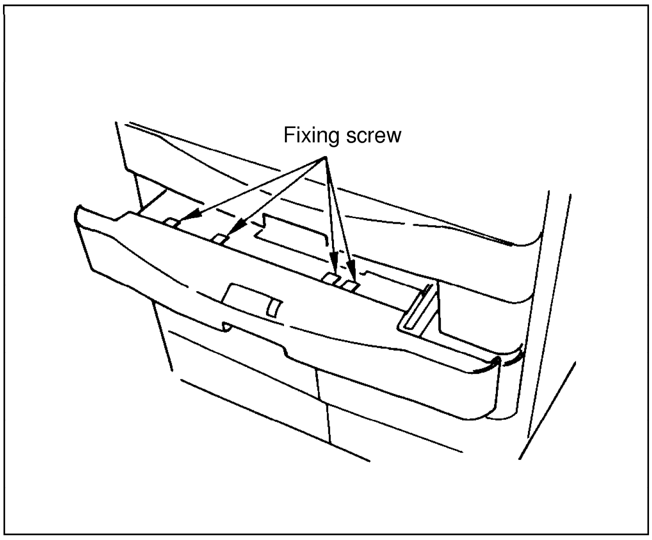
- Driver (plus screw)
- Pyramid chart (A3)

2. Centerring error of the upper tray



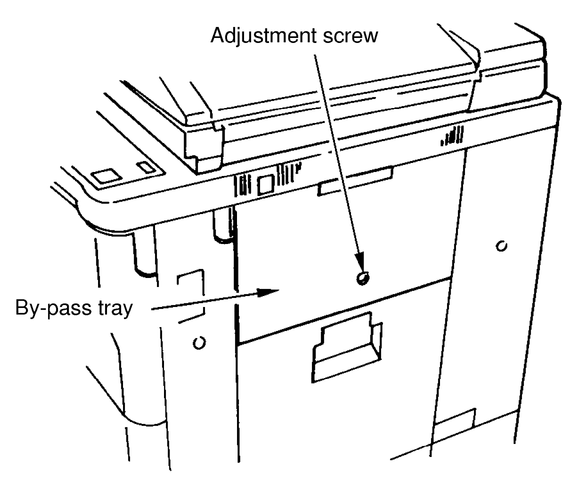
Step	Operation
1	Draw a tray in the upper step.
2	Loosen 2 fixing screws on the center unit.
3	Move a side plate and adjust for centerring error.
4	After adjustment, tighten 2 screws and conduct copying for measuring centerring error.
5	Repeat Procedures 1 through 4 until the one-sided is reduced until within the standard.

3. Centerring error of the lower tray



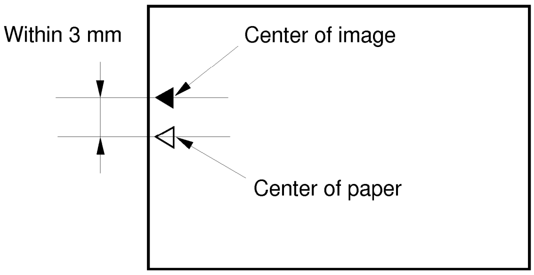
Step	Operation
1	Draw a paper tray in the lower step.
2	Loosen 4 screws on the front cover of the tray.
3	Move the cover forward/backward.
4	After adjustment, tighten 4 screws and conduct copying for measuring centerring error.
5	Repeat Procedures 1 through 4 until the centerring error is reduced until within the standard.

4. Centerring error of the by-pass tray

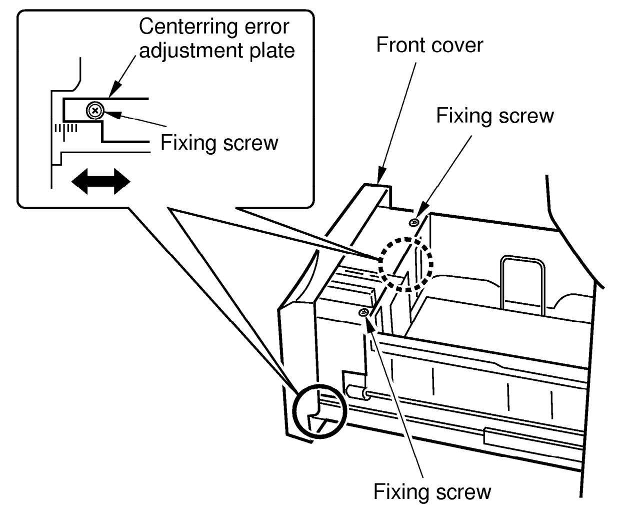

Adjustment screw
By-pass tray

Step	Operation
1	Loosen adjustment screw and down the by-pass tray.
2	Move the guid forward/backward.
3	After adjustment, conduct copying for measuring centerring error.
4	Repeat Procedures 1 through 3 until the centerring error is reduced until within the standard.

Standard value: Mis-centering .... Within 3 mm

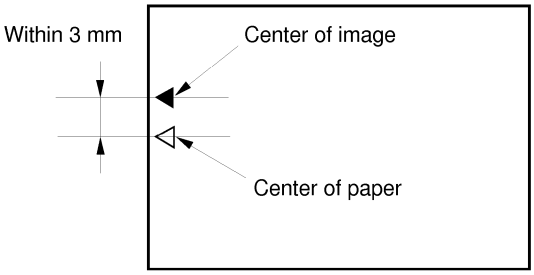

Within 3 mm
Center of image
Center of paper

5. Centerring error of the LCT tray

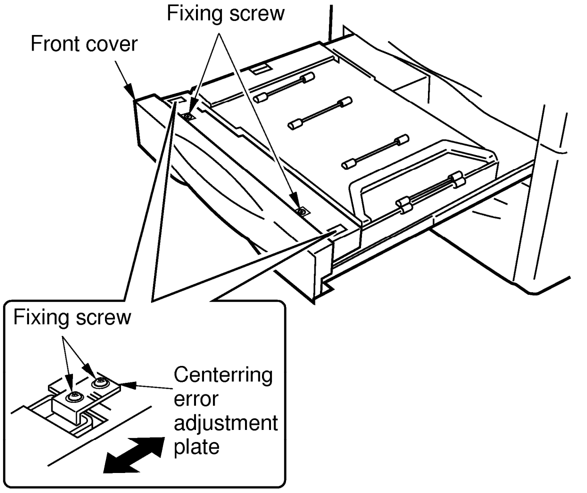

Centerring error adjustment plate
Fixing screw
Front cover
Fixing screw
Fixing screw

Step	Operation
1	Draw a LCT tray.
2	Loosen screws (one each) on the centerring error adjustment plate of the both sides tray and loosen 2 screws on the front cover of the tray.
3	Move the one-sided adjustment plate forward/backward until the centerring error is reduced until within the standard.

Standard value: Mis-centering .... Within 3 mm

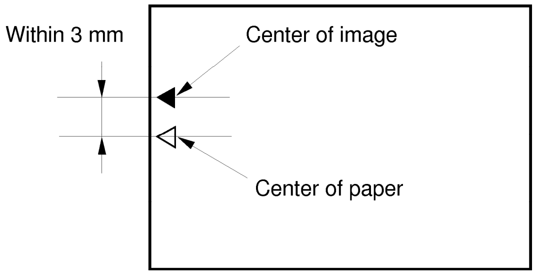

Within 3 mm
Center of image
Center of paper

6. Centerring error of the ADU


Fixing screw
Front cover
Fixing screw
Centerring error adjustment plate

Step	Operation
1	Draw a ADU.
2	Loosen screws (two each) on the centerring error adjustment plate of the both sides tray and loosen 2 screws on the front cover of the tray.
3	Move the centerring error adjustment plate forward/backward until the centerring error is reduced until within the standard. **Note:** Move left and right plate in the opposite direction.

Standard value: Mis-centering .... Within 3 mm
in 35-16 mode
(Image density : output with 255in 43-13)


Within 3 mm
Center of image
Center of paper

6

SERVICE

6. SERVICE

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Main Precautions for Maintenance

1. Points to be confirmed before maintenance
   Before starting maintenance, ask a user and collect information about troubles occurred on the machine before the maintenance and the conditions of the machine to grasp key points for the maintenance.

2. Copy sample
   Be sure to pick up samples at the start and in the end of maintenance for checking images.

3. Drum
   1) Never expose a drum to the sunlight. Be also careful not to expose a drum to indoor light as far as possible.
      When a drum unit or a drum is out of the machine, never fail to cover it with a drum cover.
   2) When replacing a drum or a cleaning blade, refer to Item of mounting/dismounting of a cleaning blade for doing a replacement work.

4. After replacing a drum, be sure to reset a drum counter before image adjustment. After replacing developer, L detection adjustment must be conducted surely.

5. When maintenance is completed, be sure to reset a PM counter. Incidentally, a development counter is reset automatically in the course of L detection adjustment.

6. When replacing a toner cartridge, wait until a toner supply LED on an operation panel flashes before the replacement.

⚠ **Note: Turn the main switch off and pull out the power plug without fail before the work of maintenance.**

SERVICE SCHEDULE <For European Countries Only>

[1] Service Schedule

Classification	Number of copies (unit: 10,000) / Service item (cycles)	Guarantee period (5 years or 5,000,000 copies)																			Service times
		12	24	36	48	60	72	84	96	108	120		408	420	432	444	456	468	480	492	
Main body	Maintenance (Every 120,000 copies)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	41 times
	Periodic check (I) (Every 240,000 copies)		●		●		●		●		●	●	●		●		●		●		20 times
	Periodic check (II) (Every 360,000 copies)			●			●			●		●			●				●		13 times
	Periodic check (III) (Every 480,000 copies)				●				●			●			●				●		10 times
	Periodic check (IV) (Every 840,000 copies)							●				●		●							5 times
	Periodic check (V) (Every 1,440,000 copies)											●			●						3 times
	Periodic check (VI) (Every 2,880,000 copies)											●									1 time
RADF (DF-306)	Maintenance (Every 120,000 copies)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	41 times
	△ Periodic check (I) (Every 240,000 copies)		●		●		●		●			●	●		●		●		●		20 times
FNS (FS-102)	Maintenance (Every 120,000 copies)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	41 times
	△ Periodic check (I) (Every 480,000 copies)				●				●			●			●				●		10 times
FNS (FS-103)	Maintenance (Every 120,000 copies)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	41 times
	Periodic check (I) (Every 1,080,000 copies)										●	●									4 times
	Periodic check (II) (Every 2,520,000 copies)											●									1 times

[2] Maintenance Items

1. Main body (Every 120,000 copies/100,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Cleaning	Check	Lubrication	Replacement	Supply	
1	Preparation	(1) Image check			●				
		(2) Kit contents check			●				
		(3) 47 - 94 (Check of adjustment value, Dmax and γ correction error)			●				
2	Fixing unit	(1) Fixing unit removing							
		(2) Jam clearance door removing							
		(3) Upper cover removing							
3	Drum unit	(1) Drum unit removing							
		(2) Drum unit check			●				
		(3) Charging unit removing							
		(4) Charging control plate removing and cleaning		●					Drum cleaner & Waste rag
		(5) Charging wire replacement (Removing & installing) 25SA2509*	1				●		
		(6) Charging corona unit (Back plate and its around, and PCL)		●					Drum cleaner & Waste rag Blower brush
		(7) Charging cleaning block/B (Upper)		●					Blower brush
		(8) Charging cleaning block/A (Lower) 25SA-253*	1				●		
		(9) Developing unit removing							
		(10) Cleaning blade removing							
		(11) Drum removing							
		(12) Drum cartridge/PTL/Developing unit bottom plate/Toner control sensor/Separating claw		●					Blower brush & Cleaning pad * Toner control sensor is Drum cleaner cleaning
		(13) Recycle pipe check			●				
		(14) Toner collecting screw/A		●					Blower brush & Cleaning pad
		(15) Guide roller removing/Drum set (replacement) Guide roller installation (replacement) (Guide roller → 25SA-208*)	1 each				●		
		(16) Cleaning blade 25SA-206*	1				●		
		(17) Cleaning blade and upper plate installing							

SERVICE SCHEDULE <For Other's Countries Only>

[1] Service Schedule

Classification	Number of copies (unit: 10,000) Service item (cycles)	Guarantee period (5 years or 5,000,000 copies)																			Service times
		12	24	36	48	60	72	84	96	108	120		408	420	432	444	456	468	480	492	
Main body	Maintenance (Every 100,000 copies)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	49times
	Periodic check (I) (Every 200,000 copies)		●		●		●		●		●	●	●		●		●		●		24 times
	Periodic check (II) (Every 300,000 copies)			●			●			●		●			●				●		16times
	Periodic check (III) (Every 400,000 copies)				●				●			●			●				●		12 times
	Periodic check (IV) (Every 800,000 copies)							●				●		●							6 times
	Periodic check (V) (Every 1,400,000 copies)											●			●						3 times
△C	Periodic check (VI) (Every 2,800,000 copies)											●									1 time
RADF (DF-306)	Maintenance (Every 100,000 copies)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	49 times
	△C Periodic check (I) (Every 200,000 copies)		●		●		●		●			●	●		●		●		●		24 times
FNS (FS-102)	Maintenance (Every 120,000 copies)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	49 times
	△C Periodic check (I) (Every 400,000 copies)				●				●			●			●				●		12 times △C
△C FNS (FS-103)	Maintenance (Every 120,000 copies)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	41 times
	Periodic check (I) (Every 1,080,000 copies)										●	●									4 times
	Periodic check (II) (Every 2,520,000 copies)											●									1 times

[2] Maintenance Items

1. Main body (Every 120,000 copies/100,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Preparation	(1) Image check			●				
		(2) Kit contents check			●				
	△C	(3) 47 - 94 (Check of adjustment value, Dmax and γ correction error)			●				
2	Fixing unit	(1) Fixing unit removing							
		(2) Jam clearance door removing							
		(3) Upper cover removing							
3	Drum unit	(1) Drum unit removing							
		(2) Drum unit check			●				
		(3) Charging unit removing							
		(4) Charging control plate removing and cleaning		●					Drum cleaner & Waste rag
		(5) Charging wire replacement (Removing & installing) 25SA2509*	1				●		
		(6) Charging corona unit (Back plate and its around, and PCL)		●					Drum cleaner & Waste rag Blower brush
		(7) Charging cleaning block/B (Upper)		●					Blower brush
		(8) Charging cleaning block/A (Lower) 25SA-253*	1				●		
		(9) Developing unit removing							
		(10) Cleaning blade removing							
		(11) Drum removing							
		(12) Drum cartridge/PTL/Developing unit bottom plate/Toner control sensor/Separating claw		●					Blower brush & Cleaning pad * Toner control sensor is Drum cleaner cleaning
		(13) Recycle pipe check			●				
		(14) Toner collecting screw/A		●					Blower brush & Cleaning pad
		(15) Guide roller removing/Drum set (replacement) Guide roller installation (replacement) (Guide roller → 25SA-208*)	1 each				●		
		(16) Cleaning blade 25SA-206*	1				●		
		(17) Cleaning blade and upper plate installing							

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Cleaning	Check	Lubrication	Replacement	Supply	
4	Developing unit	(1) Developing bias intercept		●					Blower brush & Cleaning pad
		(2) Developer	1				●		
		(3) Developing unit		●					Blower brush & Cleaning pad
		(4) Developing unit installation							
5	Transfer/ Separating corona unit	(1) Transfer/Separating corona unit (Front & rear block/Guide rail/ Separating bridge/Enter plate/ Back plate) removing & installing		●					Blower brush & Cleaning pad
		(2) Discharging wire 25SA2612*	3				●		
		(3) Wire cleaning part/1 & 2 1→25SA-263* 2→25SA-264*	1 each				●		
		(4) Transfer synchronization lamp (TSL)		●					Blower brush
6	Machine inside	(1) Upper part of conveyance unit		●					Drum cleaner & Cleaning pad
		(2) Conveyance belt		●					Drum cleaner & Cleaning pad
7	2nd paper feed unit	(1) Paper dust removing brush (Removing)		●					Cleaning pad & Blower brush
		(2) 2nd paper feed roller		●					Drum cleaner & Cleaning pad
		(3) Paper dust removing brush installing							
8	Drum unit	(1) Drum unit installing							
9	Drive unit & Filter	(1) Back plate removing							
		(2) Developing suction filter check			●				
		(3) Ozone filters H/S H→25BA7309* S→25BA7306*	1 each				●		
		(4) Timing belt check			●				
		(5) Drive gear oiling				●			Plus guard No. 2
		(6) Back plate installing							
10	ADU	(1) ADU intro. unit paper exit roller		●					Drum cleaner & Cleaning pad
		(2) 4 position each of conveyance and driven roller (ADU intro. unit)		●					Drum cleaner & Cleaning pad
		(3) Timing belt (Side external removing/ADU intro. unit removing/Belt check)			●				
		(4) Sensors (Intro. unit: 2 points/ ADU horizontal unit: 3 points/ Intro. unit & side external installing)		●					Blower brush
		(5) Gears oiling (Intro. unit & drive unit)				●			Plus guard No. 2
11	Paper feed unit (Main body/LCT)	**Upper paper feed unit**							
		(1) Upper right side plate and unit removing							
		(2) Main bottom plate and around paper feed unit		●					Blower brush & Cleaning pad

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Cleaning	Check	Lubrication	Replacement	Supply	
11	Paper feed unit (Main body/LCT)	(3) Sensor (5 positions of upper tray)		●					Blower brush
		(4) Gears (upper tray) oiling				●			Plus guard No. 2
		(5) Conveyance/driven roller (Upper tray)		●					Drum cleaner & Cleaning pad
		(6) Swing/Feeding roller (3 positions including by-pass tray)		●					Drum cleaner & Cleaning pad
		(7) Double feed prevention roller (by-pass tray) (Removing & Cleaning & Installing)		●					Drum cleaner & Cleaning pad
		(8) Double feed prevention roller (1st tray of main body) (Cassette guide rail removing/ Double feed prevention roller cleaning)		●					Drum cleaner & Cleaning pad
		(9) Cassette guide rail installing							
		(10) Double feed prevention roller (2nd tray of main body) (Cassette guide rail removing/ Double feed prevention roller cleaning)		●					Drum cleaner & Cleaning pad
		(11) Cassette guide rail installing							
		(12) Cleaning of LED board and centering error detection board		●					Blower brush
		(13) Unit (cassette) and upper right side plate installing							
		Lower paper feed unit							
		(14) Lower right plate and unit removing (LCT)							
		(15) Main bottom plate & Around paper feed unit		●					Blower brush & Cleaning pad
		(16) Sensor (4 positions of lower tray)		●					Blower brush
		(17) Gears (upper)				●			Plus guard No. 2
		(18) Conveyance & Driven roller (Lower)		●					Drum cleaner & Cleaning pad
		(19) Swing/Feeding roller (1 position)		●					Drum cleaner & Cleaning pad
		(20) Double feed prevention roller (Cleaning after opening open/ close cover)		●					Drum cleaner & Cleaning pad
		(21) Unit (LCT) and lower right side plate installing							
		LCT horizontal conveyance unit							
		(22) Horizontal conveyance rail removing							
		(23) Sensors		●					Blower brush

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
11	Paper feed unit (Main body/LCT)	(24) Gears				●			Plus guard No. 2
		(25) Conveyance roller (Upper and Lower)		●					Drum cleaner & Cleaning pad
		(26) Swing/Feeding roller		●					Drum cleaner & Cleaning pad
		(27) Double feed prevention roller		●					Drum cleaner & Cleaning pad
		(28) Horizontal conveyance roller installing							
12	Reading section	(1) Platen glass (Removing work)		●					Drum cleaner & Cleaning pad
		(2) Exposure lamp		●					Blower brush
		(3) Reflection mirror		●					Cleaning pad
		(4) Lens		●					Blower brush & Cleaning pad
		(5) 1st, 2nd and 3rd mirror		●					Blower brush & Cleaning pad
		(6) White reference board cover glass		●					Drum cleaner & Cleaning pad
		(7) APS sensor		●					Blower brush
		(8) Photo interrupter		●					Blower brush
		(9) Supply cord check			●				
		(10) Wire tension			●				
		(11) Optics guide rail oilling				●			Multi oil & Cleaning pad
		(12) Dust proof filter 25SA6210*	1				●		
13	Writing section	(1) Dust proof glass (Outside)		●					Blower brush & Cleaning pad
14	Fixing unit	(1) Oil pad removing							
		(2) Impregnated roller removing							
		(3) Fixing cleaning roller removing							
		(4) Fixing roller/Upper		●					Roller cleaner & Cleaning pad
		(5) Fixing roller/Lower (Paper exit guide plate removing)		●					Roller cleaner & Cleaning pad
		(6) Fixing claw/Upper & Lower		●					Drum cleaner & Cleaning pad
		(7) Paper exit roller		●					Drum cleaner & Cleaning pad
		(8) Fixing entrance guide plate		●					Drum cleaner & Cleaning pad
		(9) Fixing temperature sensor/2		●					Blower brush & Paper
		(10) Fixing gear oiling				●			Molytherm grease
		(11) Fixing cleaning roller (+ installing) 25SA5320*	1				●		
		(12) Impregnated roller (+ installing) 25SA5321*	1				●		
		(13) Oil pad (+ installing) 25SA-535*	1				●		
		(14) Paper exit guide plate installing							
		(15) Fixing upper cover installing							
		(16) Jam clearance door installing							
		(17) Fixing unit installing							

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
15	Final check	(1) Toner cartridge supply						●	
		(2) L detection (with new developer) 47 - 95			●				
		(3) W.U.T measure and check			●				
		(4) Image check after changing consumables			●				
		(5) Copy sample check			●				
		(6) PM counter reset 47 - 90			●				
		(7) Drum counter reset 47 - 91			●				
		(8) Leakage breaker reset			●				
		(9) Machine surroundings, Externals		●	●				Drum cleaner & Cleaning pad

2. RADF [DF-306] (Every 120,000 copies/100,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Paper feed unit	(1) Double feed prevention sheet		●					Cleaning pad
2	Conveyance unit	(1) Conveyance belt		●					Drum cleaner & Cleaning pad
		(2) Each sensor		●					Cleaning pad & Blower brush
		(3) Neutralizing brush			●				
		(4) Drive gear				●			Plus guard No. 2

3. FNS [FS-102] (Every 120,000 copies/100,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Conveyance unit	(1) Conveyance roller		●					Drum cleaner & Cleaning pad
		(2) Conveyance belt		●					Drum cleaner & Cleaning pad
		(3) Conveyance stopper		●					Drum cleaner & Cleaning pad
		(4) Conveyance guide		●					Drum cleaner & Cleaning pad
		(5) Neutralizing brush		●					Drum cleaner & Cleaning pad
2	Stapler unit	(1) Sensors		●					Blower brush
		(2) Stapling section		●					Drum cleaner & Cleaning pad
		(3) Staple cartridge 07271019*	1				●		

4. FNS [FS-103] (Every 120,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Preparation	(1) Paper passage check			●				
2	Conveyance unit	(1) Conveyance roller		●					Drum cleaner & Cleaning pad
		(2) Roller 12QR4525*	2				●		
		(3) Swing roller 12QR5065*	1				●		
3	Paper exit unit	(1) Paper exit roller/A 12QR4825*	4				●		
4	Drive unit	(1) Main drive unit *1			●	●			Plas guard No.2
		(2) Tray up unit *1			●	●			Plas guard No.2
		(3) Shift drive unit *1			●	●			Plas guard No.2
		(4) Paper exit unit *1			●	●			Plas guard No.2
		(5) Staple unit			●	●			
5	Stapler unit	(1) Staple *2 12QRK001*	2		●		●		
6	Final check	(1) Paper passage check			●				
		(2) Exterior		●	●				Drum cleaner & cleaning pad

*1:When a noise is happened by oil exhaustion, Please give them the plas guard No.2.
*2:This work confirms if the staple is exchanged by CE.

[3] Periodic Check (Main Body)

1. Periodic check (I) (Every 240,000 copies/200,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Charging corona unit	(1) Charging cleaning block/B 25SA-254*	1				●		
		(2) Charging control plate 25SA2508*	1				●		
2	Fixing unit	(1) Fixing roller/Upper 25SA5307*	1				●		
		(2) Fixing claw/Upper 25SA5315*	6				●		
		(3) Insulating sleeve 45405339*	2				●		
3	Drum unit	(1) Separating claw 25SA-219*	3				●		
4	Drive section (Filter parts)	(1) Developing suction filter 54007307*	1				●		

2. Periodic check (II) (Every 360,000 copies/300,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Paper feed unit	(1) Double feed prevention rubber 25SA4096*	8				●		
		(2) Paper supply rubber (by-pass) 54004056*	2				●		

3. Periodic check (III) (Every 480,000 copies/400,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Fixing unit	(1) Ball bearing 45407504*	2				●		
		(2) Fixing roller/Lower 25SA5372*	1				●		
		(3) Fixing claw/Lower 25BA5333*	3				●		
		(4) Fixing rolling shaft holder 25BA7603*	2				●		
2	Optics unit	(1) Exposure lamp 25SA8301*	1				●		
3	Second paper-feeder unit	(1) regist roller/lower 25SA4105*	1				●		
		(2) regist roller/upper 25SA4106*	1				●		
4	ADU unit	(1) Paper exit conveyance pulley 25SA7655*	1				●		

4. Periodic check (IV) (Every 840,000 copies/800,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Paper feed unit	(1) Feeding rubber/A 25AA4001*	4				●		
		(2) Paper feeding rubber (by-pass) 25BA4032*	1				●		
2	Fixing unit	(1) Fixing lamp/1 25SA8303*	1				●		
		(2) Fixing lamp/3 25SA8305*	1				●		

5. Periodic check (V) (Every 1,440,000 copies/1,400,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Drum unit	(1) Solenoid press-in assembly 25SA-217*	1				●		
2	Transfer & Separating corona unit	(1) Transfer & Separating corona unit assembly 25SA-260*	1				●		
3	Paper feed unit	(1) Main body paper feed intermediate clutch parts 25SA8221*	1				●		
4	Fixing unit	(1) Fixing entering gear 25BA7726*	1				●		

6. Periodic check (VI) (Every 2,880,000 copies/2,800,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Cleaning	Check	Lubrication	Replacement	Supply	
1	Writing unit	(1) Polygon mirror cleaning Right side plate and writing unit removing / Polygon mirror surface cleaning / Right side plate and writing unit installing	1 1	●					Cotton tips and mixture liquid of isopropyl alcohol and acetone in 1:1 ratio
2	Drum unit	(1) Toner control board unit 25SA-910*	1				●		
3	Paper feed unit	(1) Paper feed clutch/2 25SA8201*	1				●		
		(2) Paper feed drive shaft assembly 25BA-7653*	1				●		
		(3) Paper feed idler gear/A 25BA7704*	1				●		
		(4) Paper feed regulation gear/Upper 25SA7726*	1				●		
		(5) Paper feed drive motor 25SA8003*	1				●		
4	Charging corona unit	(1) Charging corona unit (PCL included) 25SA-250*	1				●		
5	Developing unit	(1) Developing unit 25SA-300*	2				●		
6	Fixing unit	(1) Temperature sensor 2 25SA8844*	2				●		
7	ADU	(1) Paper exit conveyance pulley 25SA7655*	2				●		
		(2) Conveyance pulley/C 25SA7659*	2				●		
		(3) Paper conveyance roller 25SA4310*					●		
		(4) ADU conveyance roller/D 25SA5016*					●		

[4] Periodic Check (I) (RADF [DF-306]) (Every 240,000 copies/200,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Cleaning	Check	Lubrication	Replacement	Supply	
1	Paper feed unit	(1) Paper feed belt 12ER4057*	2				●		
		(2) Paper supply rubber 12ER4034*	2				●		
		(3) Double feed prevention roller 12ER4031*	1				●		

[5] Periodic Check (I) (FNS [FS-102]) (Every 480,000 copies/400,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Cleaning	Check	Lubrication	Replacement	Supply	
1	Stapler unit	(1) Stapler unit 12FU2253*	1				●		

[6] FNS [FS-103]

1. Regular service (I) (Every 1,080,000 copies)

No.	Classification	Service item		Number of parts replaced	Implementation classification					Material used Tools used
					Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Process unit	(1) Stapler unit *1	12QR5210*	2				●		

*1:Guarantee period of the Stapler unit is 200k staple.
* Actual replacement timing of the unit;(5k Staple/1 Cartridge)×40 Cartridge

2. Regular service (II) (2,520,000 copies)

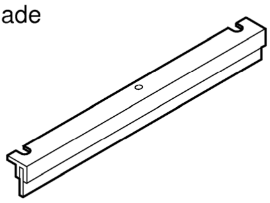
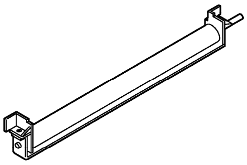
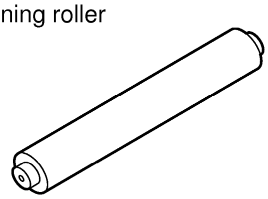
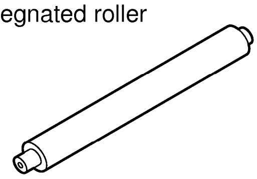
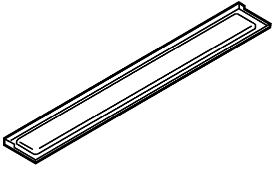
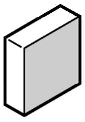
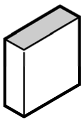
No.	Classification	Service item		Number of parts replaced	Implementation classification					Material used Tools used
					Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Drive unit	(1) Paper feed motor (Tray up/down unit motor) *1	12QR-485*	1				●		

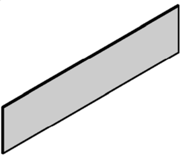
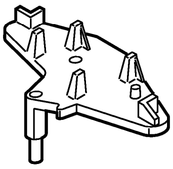
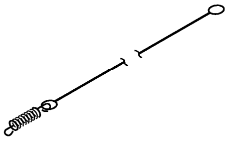
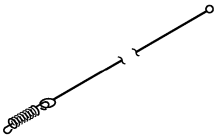
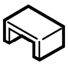
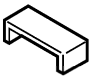
*1:When the motor is removed by CE, Please remove it holding the up-down tray to paper exit with hand.

COPY MATERIALS

[1] PM Parts Kit Construction <For European Countries Only>

1. Construction (120,000 copies/kit)

Name	Quantity
Cleaning blade 	1
Collection roller sub-assembly 	1
Fixing cleaning roller 	1
Fixing impregnated roller 	1
Oil pad-assembly 	1
Filter H 	1
Filter S 	1

Name	Quantity
Dust-proof filter 	1
Charging corona unit cleaning block/A sub-assembly 	1
Charging corona wire 	1
Corona wire (transfer corona) 	3
Transfer unit cleaning block/upper sub-assembly 	1
Separation unit cleaning block/upper sub-assembly 	1

6. Periodic check (VI) (Every 2,880,000 copies/2,800,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Writing unit	(1) Polygon mirror cleaning Right side plate and writing unit removing / Polygon mirror surface cleaning / Right side plate and writing unit installing	1 1	●					Cotton tips and mixture liquid of isopropyl alcohol and acetone in 1:1 ratio
2	Drum unit	(1) Toner control board unit 25SA-910*	1				●		
3	Paper feed unit	(1) Paper feed clutch/2 25SA8201*	1				●		
		(2) Paper feed drive shaft assembly 25BA-7653*	1				●		
		(3) Paper feed idler gear/A 25BA7704*	1				●		
		(4) Paper feed regulation gear/Upper 25SA7726*	1				●		
		(5) Paper feed drive motor 25SA8003*	1				●		
4	Charging corona unit	(1) Charging corona unit (PCL included) 25SA-250*	1				●		
5	Developing unit	(1) Developing unit 25SA-300*	2				●		
6	Fixing unit	(1) Temperature sensor 2 25SA8844*	2				●		
7	ADU	(1) Paper exit conveyance pulley 25SA7655*	2				●		
		(2) Conveyance pulley/C 25SA7659*	2				●		
		(3) Paper conveyance roller 25SA4310*					●		
		(4) ADU conveyance roller/D 25SA5016*					●		

[4] Periodic Check (I) (RADF [DF-306]) (Every 240,000 copies/200,000 copies)

No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Paper feed unit	(1) Paper feed belt 12ER4057*	2				●		
		(2) Paper supply rubber 12ER4034*	2				●		
		(3) Double feed prevention roller 12ER4031*	1				●		

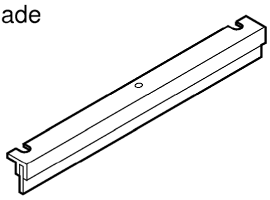
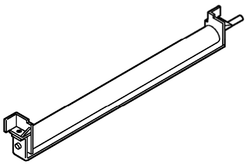
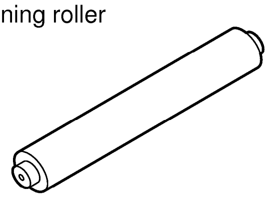
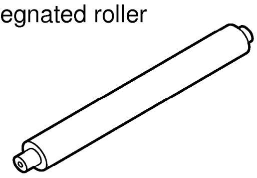
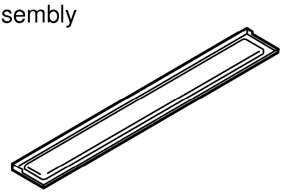
[5] Periodic Check (I) (FNS [FS-102]) (Every 480,000 copies/400,000 copies)

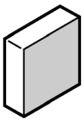
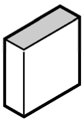
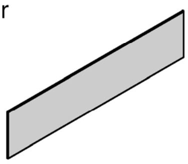
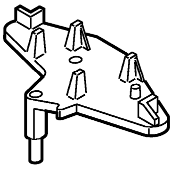
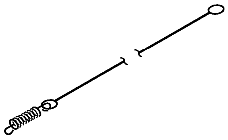
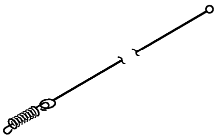
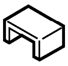
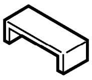
No.	Classification	Service item	Number of parts replaced	Implementation classification					Material used Tools used
				Clean-ing	Check	Lubri-cation	Replace-ment	Supply	
1	Stapler unit	(1) Stapler unit 12FU2253*	1				●		

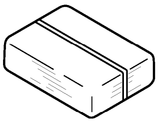
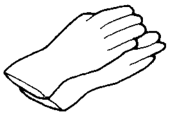
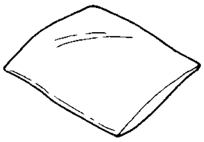
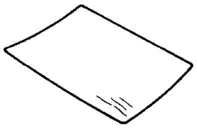
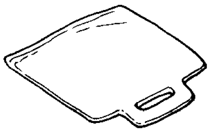
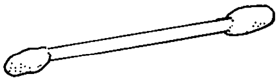
COPY MATERIALS

[1] Maintenance Kit Construction <For Other's Countries Only>

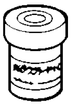
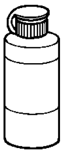
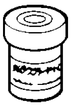
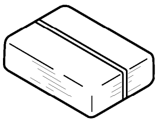
1. Construction (100,000 copies/kit)

Name	Quantity
Developer	1
Cleaning blade 	1
Collection roller sub-assembly 	1
Fixing cleaning roller 	1
Fixing impregnated roller 	1
Oil pad-assembly 	1

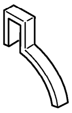
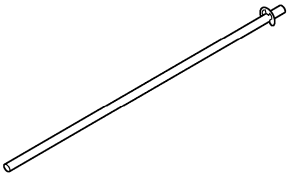
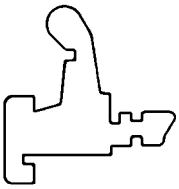
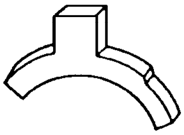
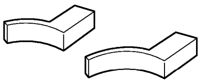
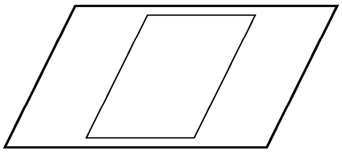
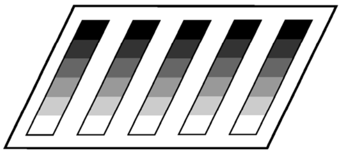
Name	Quantity
Filter H 	1
Filter S 	1
Dust-proof filter 	1
Charging corona unit cleaning block/A sub-assembly 	1
Charging corona wire 	1
Corona wire (transfer corona) 	3
Transfer unit cleaning block/upper sub-assembly 	1
Separation unit cleaning block/upper sub-assembly 	1

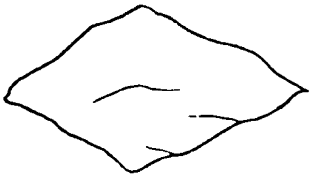
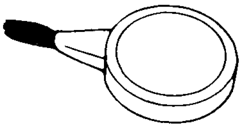
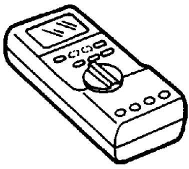
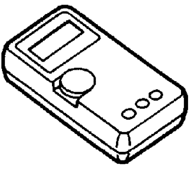
Name	Quantity
Cleaning pad (10 sheets) 	3
Polyethylene gloves 	1 set
Dust bag (rubber band) 	1
Developer collecting sheet (rubber band) 	1
Vanity bag for collection 	1
Cotton tips (4 pcs.) 	1

SERVICE MATERIALS LIST

Material No.	Description	Shape	Remark
000V-16-0	Drum cleaner	 200 ml	
000V-17-0	Roller cleaner	 200 ml	
00GR00020	Plus guard No. 2	 25 g	
00GR00170	Multi-oil	 200 ml	
00GR00140	Molytherm grease	 25 g	
000V-19-0	Setting powder	 25 g	
000V-18-0	Cleaning pad	 10 pcs 1 pack	

SPECIAL TOOLS LIST

Tool No.	Description	Shape	Quantity	Remark
7050K0010	Temp. sensor PS adjusting jig		1	
7050K0020	Optics position adjusting jig		2	
00M6-2-00	Door switch jig		1	
00M8-1-00	Thermostat PS adjusting jig (upper roller)		1	
00M8-2-00	Thermostat PS adjusting jig (lower roller)		1	
00V9-4-00	AE chart		1	
00VD-2002	Potential adjusting chart		1	
00VD-5000	New pyramid chart		1	

Tool No.	Description	Shape	Quantity	Remark
00VC-2-00	Drum cover		1	
00VD-1000	Blower brush		1	
00VE-1002 or 00VE-1003	Tester	 (00VE-1002)  (00VE-1003)	1	

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SAFETY AND IMPORTANT WARNING ITEMS

Read carefully the Safety and Important Warning Items described below to understand them before doing service work.

IMPORTANT NOTICE

Because of possible hazards to an inexperienced person servicing this equipment, as well as the risk of damage to the equipment, Konica Corporation, strongly recommends that all servicing be performed only by Konica-trained service technicians.

Changes may have been made to this equipment to improve its performance after this service handbook was printed. Accordingly, Konica Corporation, makes no representations or warranties, either expressed or implied, that the information contained in this service handbook is complete or accurate. It is understood that the user of this service handbook must assume all risks or personal injury and/or damage to the equipment while servicing the equipment for which this service handbook is intended.
Therefore, this Service Handbook must be read carefully before doing service work both in the course of the technical training and even after that, for keeping the correct maintenance and control of the copying machine. Keep the Service Handbook also for the future service. When it is impossible to read the description about safety and warning (due to contamination or tear), the relevant page should be replaced.

DESCRIPTION ITEMS FOR DANGER, WARNING AND CAUTION

In this Service Handbook, each of three expressions, "⚠ DANGER", "⚠ WARNING" and "⚠ CAUTION" is defined as follows together with a symbol mark to be used in a limited meaning.
When servicing, the relevant works (disassembling, assembling, adjustment, repair and maintenance) need to be conducted with utmost care.

⚠ DANGER:	**Actions having a high possibility of suffering death or serious wound**
⚠ WARNING:	**Actions having a possibility of suffering death or serious wound**
⚠ CAUTION:	**Actions having a possibility of suffering a slight wound, medium trouble and material damage**

IMPORTANT WARNING ITEMS

[1] UNAUTHORIZED MODIFICATIONS

Konica copiers have gained a reputation for being reliable products. This has been attained by a combination of outstanding design and a knowledgeable service force.

The design of the copier is extremely important. It is the design process that determines tolerances and safety margins for mechanical, electrical, and electronic aspects. It is not reasonable to expect individuals not involved in product engineering to know what effect may be caused by altering any aspect of the machine's design. Such changes have the potential of degrading product performance and reducing safety margins.

For these reasons, *installation of any modification not specifically authorized by Konica Corporation, is strictly prohibited.*

The following list of prohibited actions is not all-inclusive, but demonstrates the intent of this policy.

⚠ **CAUTION:**

1. **Using an extension cord or any unauthorized power cord adapter.**
2. **Using any fuse that is not of a type specified by Konica.**
3. **Using wire, paper clips, solder, etc., to replace or eliminate any fuse (including temperature fuses).**
4. **Removing (except for replacement) any air filter.**
5. **Defeating the operation of relays by any means (such as wedging paper between contacts).**
6. **Causing the machine to operate in a fashion other than as it was designed.**
7. **Making any change which might have a chance of defeating built-in safety features.**
8. **Using any unspecified replacement parts.**

[2] GENERAL SAFETY GUIDELINES

This copier has been examined in accordance with the laws pertaining to various product safety regulations prior to leaving the manufacturing facility to protect the operators and service personnel from injury. However, as with any operating devise, components will break down through the wear-and-tear of everyday use, as will additional safety discrepancies be discovered.
For this reason, it is important that the technician periodically performs safety checks on the copier to maintain optimum reliability and safety.

⚠ **CAUTION:**

1. **Avoid injury.**
2. **Ensure that the copier is disconnected from its power source before continuing.**
3. **Do a job wearing clothes which make the job easy and safe.**
   In case that even touching driving section, there must be no posibility of any injury like rolling up clothes.

The following checks, not all-inclusive, should be made during each service call:

⚠ **CAUTION:**

1. **Look for sharp edges, burrs, and damage on all external covers and copier frame.**
2. **Inspect all cover hinges for wear (loose or broken).**
3. **Inspect cables for wear, frays, or pinched areas.**
4. **Ensure that the power cord insulation is not damaged (No exposed electrical conductors).**
5. **Ensure that the power cord is properly mounted to the frame by cord clamps.**

⚠ **WARNING:**

1. **Check the continuity from the round lug (GND) of the power cord to the frame of the copier. Ensure continuity.**
   An improperly grounded machine can cause an electrically-charged machine frame.
2. **When an earth cable is connected to the improper position, there is a possibility of danger such as explosion or an electric shock. Therefore, the earth cable should not be connected to the following items.**
   - **a. Gas pipe**
   - **b. Lightning rod**
   - **c. Earth cable for telephone line**
   - **d. Water service pipe made of resin, and water service pipe and faucet which are not approved to be grounded by the Waterworks Bureau.**

[3] SAFEGUARDS DURING SERVICE CALLS

⚠ **CAUTION:**

1. **Confirm that all screws, parts, wiring and connector which are removed during maintenance are installed in their original positions.**
   (Especially, negligence of inserting a connector, a sandwiched cord and negligence of driving a screw should be avoided.)
2. **When disconnecting connectors, do not pull the wiring, particularly on AC line wiring and high voltage parts.**
3. **Do not route the power cord where it is likely to be stepped on or crushed.**
4. **Carefully remove all toner and dirt adhering to any electrical units or electrodes.**
5. **After part replacement or repair work, route the wiring in such a way that it does not contact any burrs or sharp edges.**
6. **Do not make any adjustments outside of the specified range.**

[4] WHEN USING SERVICE MATERIALS

⚠ **CAUTION: Care should be exercised when using isopropyl alcohol due to its flammability. When using alcohol to clean parts, observe the following precautions.**

1. **Remove power from the equipment.**
2. **Use alcohol in small quantities to avoid spillage or pudding. Any spillage should be cleaned up with rags and disposed of properly.**
3. **Be sure that there is adequate ventilation.**
4. **Allow a surface which has been in contact with alcohol to dry for a few minutes to ensure that the alcohol has evaporated completely before applying power or installing covers.**

⚠ **CAUTION: Though toner and developer are harmless, pay attention not to inhale them, or not to expose eyes to them excessively. If this happens, wash eyes well with clear water and consult a doctor.**

[5] ACTION TO TAKE IN THE EVENT OF A SERIOUS ACCIDENT

1. If an accident occurs, the sales company or dealer that was notified of the accident first must take necessary emergency action to assist any injured persons and also prevent any further damage or injury.
2. If the customer notifies you of a serious accident, promptly check the situation regarding damage, injury, and so on, and report to Sales Company. Upon receiving this report, Sales Company must report to KC.
3. In order to determine the cause of the accident, preserve the site of the accident and also the machine itself, witness the investigation, and also follow any instructions from Sales Company or KC.

[6] SUMMARY

It is the responsibility of every technician to use professional skills when servicing Konica products. There are no short cuts to high-quality service. Each copier must be thoroughly inspected with respect to safety considerations as part of every routine service call. The operability of the copier, and more importantly, the safety of those who operate or service the copier, are directly dependent upon the conscientious effort of each and every technician.

Remember .... when performing service calls, use good judgement (have a watchful eye) to identify safety hazards or potential safety hazards that may be present, and correct these problem areas as they are identified-the safety of those who operate the copier as well as those who service the copier depend on it!

SAFETY INFORMATION

LASER SAFETY

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products manufactured since Augrust 1, 1976. Compliance is mandatory for products marketed in the United States.

This copier is certified as a "Class 1" laser product under the U.S.
Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. Since radiation emitted inside this copier is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

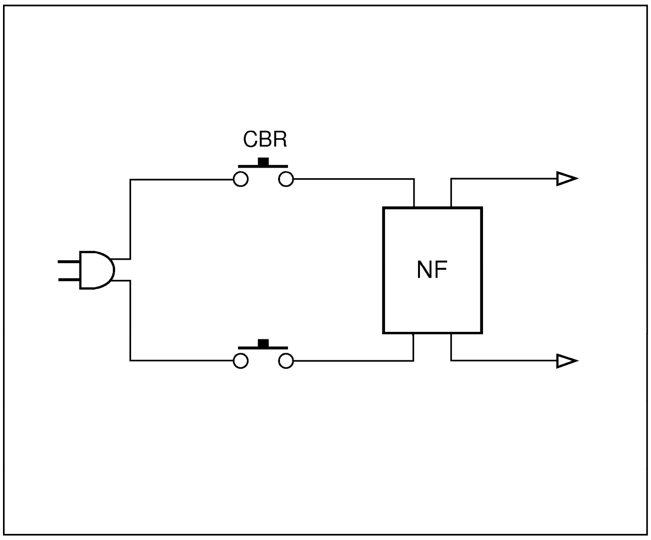
SAFETY CIRCUITS

The electrical circuit of this machine contains the following safety circuits to prevent an accident from occurring in the event of an abnormality.

[1] Overall safety circuit protector
[2] L1 (exposure lamp) overheating protection circuit
[3] L2, L4 (fixing heater lamp) overheating protection circuit

These safety circuits are described below to provide the service enginear with a renewed awareness of them in order to prevent servicing errors that may impair their function.

[1] Overall Safety Circuit Protector

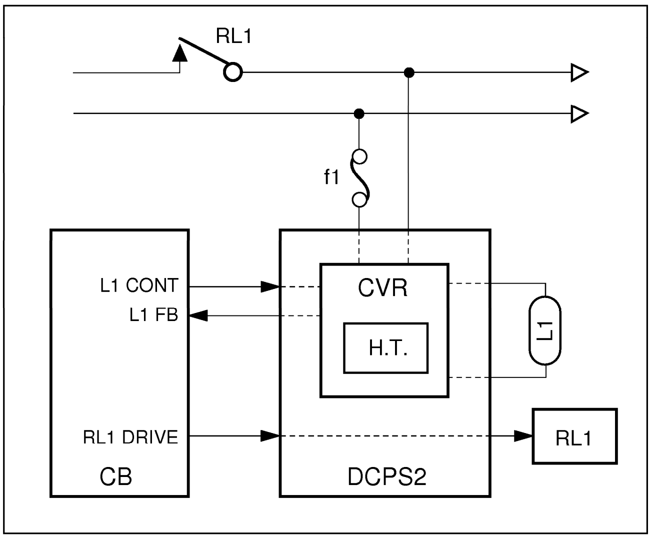


1. Protection function provided by the CBR (circuit breaker)

This function breaks the AC line instantaneously in the event that an excessive current flows due to a short between the AC line, for example.

⚠ **CAUTION: The function of the CBR must not be de-activated under any circumstances whatever.**

[2] L1 (exposure lamp) Overheating Protection Circuit



1. Protection function provided by software

When the L1 CONT signal output from the protection function CB (control board) by software becomes [L], L1 lights. At the same time, the L1 FB signal, which indicates that L1 is lit, is output from DCPS2 to the CB.

The CB monitors both the L1 CONT and L1 FB signals.

If they differ from each other, RL1 (main relay) will be turned OFF, and power to L1 will be cut off.

⚠ **CAUTION: The function of RL1 must not be de-activated under any circumstances.**

2. Protection function using H.T. (hardware timer circuit)

If L1 remains lit for moer than prescribed time because of some abnormality, the hardware timer on DCPS2 will operate, forcibly cutting off the relay on this board.

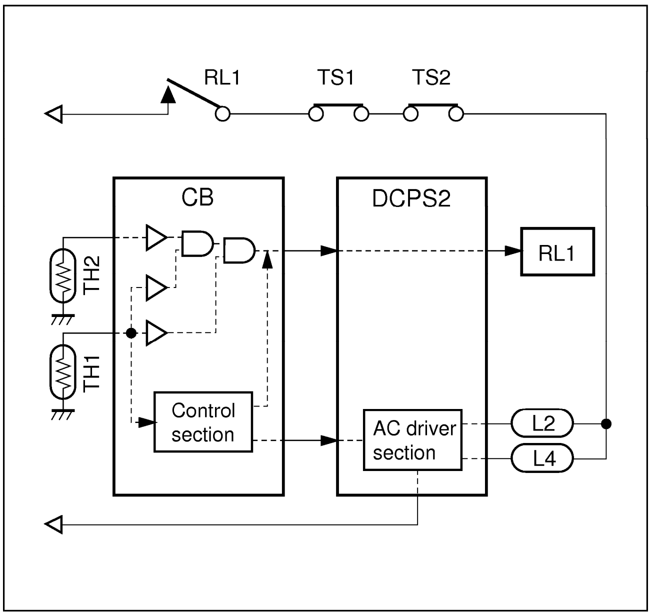
⚠ **CAUTION: The function of relay must not be de-activated under any circumstances.**

3. Protection function using f1 (optics temperature fuse)

If the temperature in the vicinity of f1 rises above prescribed temperature f1 will blow, cutting off the flow of current to L1.

⚠ **CAUTION: Do not under any circumstances use a piece of wire, etc., In place of f1.**

[3] L2, L4 (fixing heater lamp) Overheating Protection Circuit



1. Protection function provided by software

This function turns OFF L2 (fixing heater lamp 1), L4 (fixing heater lamp 2) and RL1 (main relay) in the event that the output voltage from TH1 (fixing temperature sensor 1) read the CPU is abnormal.

⚠ **CAUTION: Periodically check the contact face of TH1 with respect to the roller, and replace TH1 if it is abnormal.**
The function of RL1 must not be deactivated under any circumstances.

2. Protection function provided by hardware (circuit)

This function uses a comparator circuit which compares the output voltage of TH1 and TH2 (fixing temperature sensor 2) with the abnormal judgment reference value.
It disconnects L2, L4 and RL1 from the circuit in the event that the output voltage of TH1 or TH2 exceeds the reference value.

⚠ **CAUTION: Periodically check the contact face of TH2 with respect to the roller, and replace TH1, TH2 if it is abnormal.**
The function of RL1 must not be deactivated under any circumstances.

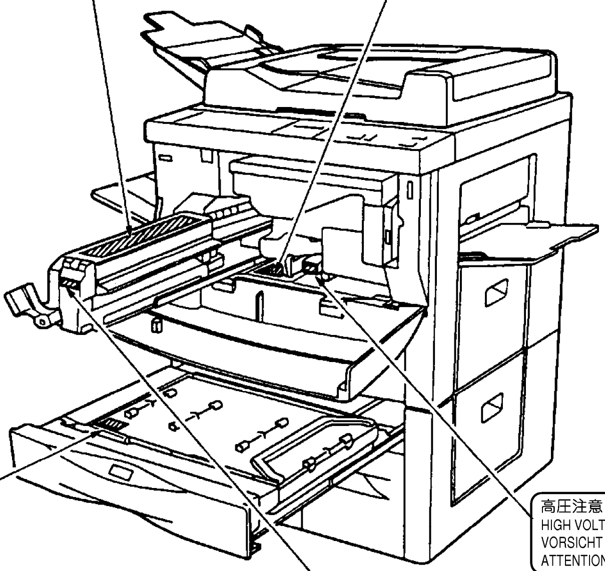
3. Protection function provided by TS1 (thermostat (upper)) and TS2 (thermostat (lower))

This function turns OFF TS1 or TS2, directly cutting off the power to L2, L3 and L4, if the temperature of the either upper fixing roller or lower fixing roller exceeds the specified value.

⚠ **CAUTION: Do not substitute a different electrical conductor in place of TS1 or TS2.**

INDICATION OF WARNING ON THE MACHINE

The caution labels are attached to the machine areas, as shown below, where you are advised to pay special attention to avoid any dangerous situations or serious injury.



⚠ CAUTION
High temperature
can cause burns.
Take care when
removing jam.

⚠ 内部高温注意
高温によって火傷することがあります。
注意して紙詰まりを除去して下さい。

⚠ ATTENTION
Haute temperature
risque de brülure.
Soyez prudent en retirant
une feuille coincée.

⚠ VORSICHT
Hohe temperaturen
Können verbrennungen verursachen.
Bitte vorsicht bei antfernen
von papierstau.

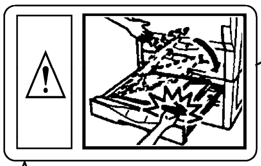
⚠ **CAUTION:**

This portion is internally very hot. Do not touch it, lest you should get burnt.

⚠ CAUTION/ATTENTION/VORSICHT
High Temperature !
Température élevée !
Heiße Oberfläche !
DO NOT TOUCH
Use care when clearing paper.
Risque de brûlure.
Soyez prudent en retirant la feuille coincée.
Brandverletzungsgefahr.
Bei Beseitigung von Papierstaus vorsichtig vorgehen.

⚠ **CAUTION:**

This portion is internally very hot. Do not touch it, lest you should get burnt.



⚠ **CAUTION:**

The ADU guide plate is not latched. Do not release it, lest you may cause injury.

CAUTION HIGH TEMPERATURE
VORSICHT HEISSE INNENFLACHEN
ATTENTION TEMPERATURE ELEVEE
内部高温注意

⚠ **CAUTION:**

This portion is internally very hot. Do not touch it, lest you should get burnt.

高圧注意
HIGH VOLTAGE CAUTION.
VORSICHT HOCHSPANNUNG.
ATTENTION HAUTE TENTION.

⚠ **CAUTION:**

This portion has a high voltage generated. Never touch it, lest you should be electrically shocked.

⚠ **CAUTION:**

You may be burned or injured if you touch any area that you are advised by any caution label to keep yourself away from.
Do not remove caution labels. If any caution label or caution indicator is soiled, clean the label. If you cannot make it legible or if the caution label is removed, please contact your Service Centre.